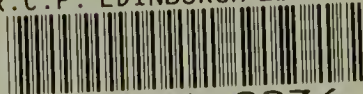
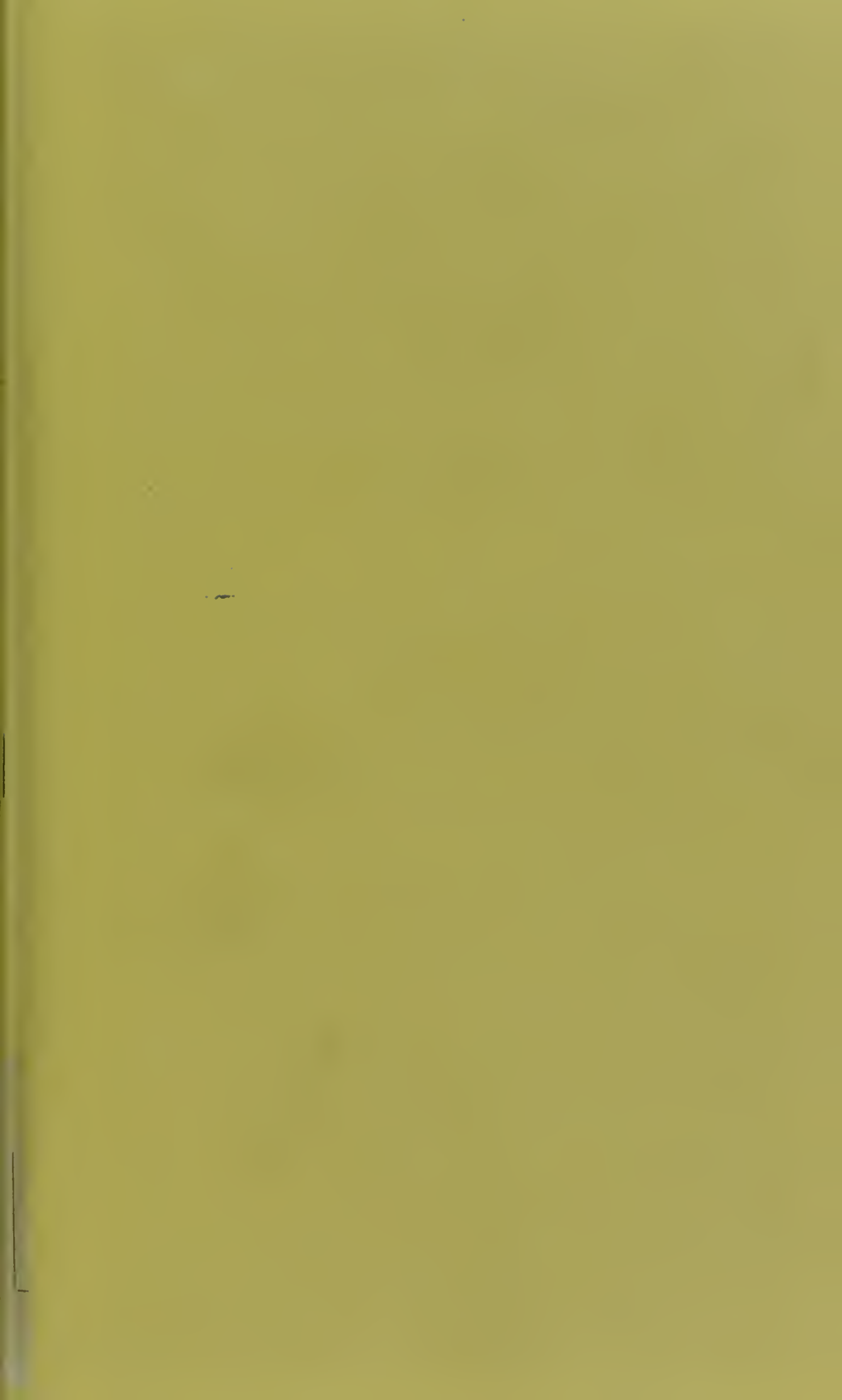


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OF
ANIMAL PLAGUES

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ANIMAL PLAGUES:

THEIR

HISTORY, NATURE, AND PREVENTION.

BY

GEORGE FLEMING, F.R.C.V.S., F.R.G.S., ETC.,

PRESIDENT OF THE ROYAL COLLEGE OF VETERINARY SURGEONS; CORRESPONDING MEMBER OF
THE SOCIÉTÉ NATIONALE ET CENTRALE DE MÉDECINE VÉTÉRINAIRE OF PARIS; OF THE
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OF ITALY; OF THE SOCIÉTÉ VÉTÉRINAIRE D'ALSACE LORRAINE; OF THE ASSOCIATION
MÉDICALE VÉTÉRINAIRE OF ANTWERP; OF THE SOCIÉTÉ DE MÉDECINE
VÉTÉRINAIRE OF LIÉGE, ETC.

VOLUME II.

(FROM A.D. 1800—1844.)



LONDON:

BAILLIÈRE, TINDALL, AND COX,

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1882.

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TO

His Excellency, Earl Spencer, K.G.,

*Lord-President of the Privy Council and Lord-Lieutenant
of Ireland,*

THIS VOLUME IS DEDICATED

IN GRATEFUL ACKNOWLEDGMENT OF HIS INVALUABLE SERVICES IN
PROMOTING VETERINARY SCIENCE, AND PARTICULARLY IN
CONNECTION WITH THE VETERINARY SURGEONS
ACT OF 1881.

ERRATUM.

Page 448, Chapter V., *for* 'Period from A.D. 1840 to A.D. 1842,' *read* 'Period from A.D. 1841 to A.D. 1844.'

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P R E F A C E.

THIS volume is a sequel to that published under the same title in 1871, and which contained a chronological history of animal plagues from B.C. 1490 to A.D. 1800. It continues the history from A.D. 1800 to A.D. 1844, and is arranged on the same plan, *i.e.* chronologically, the record for each year being made to embrace the outbreaks of general disease among animals of different species ; the nature and symptoms of the various disorders ; their relation and dependence upon specific, telluric, or other influences ; and the coincident plagues of mankind—all given, when possible, or necessary, in the words of those who described them. Many, if not nearly all of the notices of these outbreaks of panzoötic and epizoötic diseases, have never yet appeared in English medical literature, and a number of them possess great interest : for example, the outbreaks of influenza and the so-called venereal disease among horses ; anthrax, cattle-plague, and foot-and-mouth disease in cattle ; the contagious foot disease of sheep ; the strange outbreak of rabies among foxes on the Continent, and which continued for so many years ; wide-spread mortalities among dogs and cats ; and mysteriously-originating plagues among feral creatures.

The two volumes constitute a portion of a large undertaking, commenced about twenty years ago, and designed to embrace not only this history, but also to treat specially of those scourges whose invasions have caused* such serious losses among our domesticated animals, and materially injured our national prosperity.

The exigencies of a military career, however, not only

greatly retarded the progress of the task, but altered the manner of its accomplishment. So it happened, that when the first volume was published in 1871, it was deemed advisable to print a section—that on rabies and hydrophobia—which appeared as a monograph in 1872, while the more special division was issued in two volumes in 1875, under the title of ‘Veterinary Sanitary Science and Police.’ It is only at this late period that I am enabled to offer the present continuation of the historical division, as complete as possible in details and references.

It is not my intention, at present, to carry on the history, as after 1844 veterinary literature becomes largely developed, and there is no difficulty in tracing the origin and extension of the more remarkable, at least, of the animal plagues which have visited the civilized world since that date.

The value of a history of contagious diseases of animals cannot be doubted. Had the history of foot-and-mouth disease and contagious pleuro-pneumonia of cattle on the Continent of Europe been known in this country, as it is exhibited in this volume, these terrible disorders would surely never have been allowed to invade our shores in 1839 and 1841, or when they did appear they must have been quickly suppressed. The dreadful havoc made by them and other preventible diseases has been largely, if not altogether, due to ignorance of their history; and it is owing to this ignorance that England has been chiefly instrumental in disseminating contagious pleuro-pneumonia over nearly the whole world.

At the end of the volume I have appended a chronological synopsis of the panzoötic and epizoötic diseases of animals, arranged chiefly according to species, which may prove not only interesting, as showing the relative frequency of these disorders, but valuable also as an index.

GEORGE FLEMING.

CATHCART LODGE, ST. JOHN'S, LONDON,
August, 1882.

HISTORY

OF

ANIMAL PLAGUES.

CHAPTER I.

PERIOD FROM A.D. 1800 TO A.D. 1815.

A.D. 1800. Epidemic malignant yellow fever prevailed in America. In the autumn, Cadiz and Seville were ravaged by a similar pestilence; towards the middle of September the deaths amounted to two hundred a day. 'At this period,' writes Arejula,¹ 'the air, from its stagnant condition, became so vitiated that its noxious qualities affected even the lower order of animals: canary birds died with blood issuing from their beaks; and in none of the neighbouring towns which were afterwards infected, did any sparrows appear during the epidemic. We saw,' he continues, 'many of the domesticated animals, when dying, present some of the symptoms witnessed in people suffering from this malady. Dogs were affected by the epidemic more than the other animals; next, the cats suffered severely, as well as the horses; then poultry and canaries. Dogs and cats were also liable to hæmorrhages, but more so to the black vomit, and to dark-coloured fœtid evacuations. The horses which I saw die had that marble-like coldness of the extremities, or the general convulsions so remarkable in this disease.' Another writer, Fellows,² states

¹ *Arejula*. Succinta Exposicion de la Enfermedaden. Malaga, 1804.

² *Bascome*. A History of Epidemic Pestilences. London, 1851, p. 146.

that all the physicians in Cadiz and Malaga who described the disorder, and with whom he had conversed, confirmed to him the above facts.

Epizoötic ekzema appears to have been unusually prevalent in many provinces of Germany.¹

In the Venetian States, a deadly epizoöty of malignant anthrax (*cancri maligno*) caused much loss ;² and the same malady was very severe in some districts of Upper Italy.³ In Italy, generally, epizoötic pneumonia (*pulmonera*), with dysentery (*flusso dissenterico*), was observed.⁴ This, in all probability, was the Cattle Plague.

From the commencement of this century, it was commonly remarked that the 'staggers' (*tournis*), caused by hydatids in the brain, was becoming much more frequent among sheep. Another malady, new to comparative pathologists, and supposed to have been introduced by Merino sheep from Spain, was the hydro-rachitis ('trembling,' or 'loup-ill,' the 'maladie tremblante' of the French, the 'traberkrankheit' of the Germans) of lambs. It came as a severe, but for a long time obscure, scourge among the flocks.⁵ Until Tessier described it in 1810, its pathology was unknown, and since that period it has been thoroughly investigated by Girard, Stœrig, Roche-Lubin, Just, Cauvet, and others. Though its appearance coincided with the introduction of Merino sheep, Cauvet asserts that it is very certain that nowadays it is witnessed in flocks of pure-bred French sheep. Settegast has insisted that one cause for it among the Merinos is *consanguinity*; the comparatively small number of these animals imported having led to their being too much bred in-and-in.⁶

Glanders broke out among the horses in the troop and transport ships during the expedition to Egypt, and while in Quiberon Bay. Mr. Mogford⁷ attributed its production to

¹ *Laubender*. Seuchengeschichte der Landwirthschaftlichen Hausthiere. München, 1811, vol. i. p. 261.

² *Bottani*. Delle Epizoözie del Veneto Dominio. Venezia, 1819, vol. iii. p. 215.

³ *Ibid.*

⁴ *Ibid.*

⁵ *Richthofen*. Die Traberkrankheit de Schafe. Breslau, 1827.

⁶ *Journal de Vétérinaires du Midi*, 1854. *Annales de Méd. Vétérinaire de Bruxelles*, 1863.

⁷ *Mogford*. *The Veterinarian*, vol. xiii. p. 523.

close confinement between decks during gales of wind, the hatchways having been battened down.¹ But as this very contagious malady was prevalent in England at that period, and particularly amongst the cavalry and artillery horses, it is more likely that some of those sent on this expedition were infected before embarkation.

A.D. 1801. Swarms of mice caused great destruction in Germany, and Greece was invaded by locusts, which ate up all the herbage, crops, and fruit. The epidemy of Egyptian ophthalmia began in Europe. An epidemy broke out at Roettingen, which Hecker thought resembled very closely the English sweating sickness. The yellow fever still raged in Spain. Gonzalez² is positive as to the fact of a dog at Cadiz having the black vomit, and dying lethargic and jaundiced. He also attests to the phenomena of canaries having blood issue from their bills, and the absence of sparrows over the whole country at this time.

During the summer, which was very hot, anthrax broke out among cattle in the department of Dordogne, France.³

The Cattle Plague, which had been imported into Poland in 1799, and thence into Prussia, was cruelly devastating that country, Brandenburg, Illyria, Switzerland, France, and Saxony.⁴ This pest, carried about by the movement of troops during the wars of Napoleon I., also decimated the cattle in Hungary, the Venetian States, and the States of the Church.⁵

In France, the flocks of the Haute-Pyrénées were decimated by variola ovina.

Humboldt, who was at this time travelling in Peru, alluding to earthquakes, and the fact so frequently observed of the lower animals, particularly swine, being the first to perceive their occurrence—whether owing to their being nearer the ground than mankind, or their organs receiving the impression of some gaseous emanations given off—mentions that, in the

¹ The Veterinarian, vol. xiii. p. 655.

² Gonzalez. Disertacion Medica sobre la Calentura que regno en Cadiz, 1801.

³ Annales de l'Agriculture Français, vol. xii. p. 69.

⁴ Laubender. Op. cit. vol. ii. pp. 1-111.

⁵ Bottani. Op. cit. vol. viii. p. 325. Metaxa. Dele Malattie Contagiose ed Epizoôtiche. Roma, 1817, vol. i. p. 288.

inland country of Peru, at the termination of a violent earthquake, the herbs covering the savannahs acquired noxious properties, an epizootic disorder broke out among the cattle, and a great number of them appeared stupefied or suffocated by the deleterious vapours exhaled from the ground.¹

Carbuncular erysipelas (*vulgo* 'black-leg,' 'quarter-evil,' etc.) appears to have been more than usually common in Ireland. 'It is so infectious, that if the diseased beast is suffered to remain amongst the stock for many hours after it is seized, it generally communicates the distemper to others. If they even smell the spot where the infected beast has died or where his blood has been spilled, contagion will surely follow, and is as surely fatal. Calves under two years old, highly bred or highly fed, are most subject to it; and although it seldom originates in old beasts, yet they are liable to take it from infected young cattle. Care should be taken to bury the diseased quarter, which is quite black and reduced nearly to a jelly, quite out of the reach of dogs, as, if rooted up, it might be productive of incalculable mischief to the remaining stock!'²

A great scarcity of pigs in Ireland, owing, it was reported, to the two calamitous foregoing years.

Wirth states that glossanthrax prevailed extensively in Switzerland.³

A.D. 1802. A snowy winter, and hot summer, with incessant heavy rain and dense fogs in the autumn, especially in Central Germany. A caterpillar, supposed to be the larva of the *Chareas Graminis*, caused great damage to the sheep-farms of Tweeddale;⁴ and Suabia was infested to an alarming degree by multitudes of field-mice.⁵ In November, a fatal epidemic in mankind.

In Ireland 'horses had a disorder similar to the influenza,

¹ *Humboldt*. Travels to the Equinoctial Regions of America. Bohn's Edition, vol. i. p. 163. For striking instances of the premonitory evidence of earthquakes afforded by animals, see *Fitzroy*. Voyages of the Adventure and Beagle, vol. ii. pp. 402, 405. *Ulloa*. Relacion Hist. d. Viage a la America Meridional. Madrid, 1748. *Tschudi*. Travels in Peru, p. 165.

² *Thompson*. Meath.

³ *Wirth*. Lehrbuch der Seuchen und Ansteckenden Krankheiten der Hausthiere. Zurich, 1846, p. 363.

⁴ Farmer's Magazine, vol. i. p. 124. ⁵ *Faulkner's Journal*. ⁶ *Bascome*, Op. cit.

in the spring of 1802, attended with severe, hard cough, laborious, difficult respiration, fever, and great prostration of strength. It terminated favourably by a plentiful discharge from the nostrils; with some it terminated in farcy and heart-strangles, so-called, and some it killed.¹ In the latter the lungs and heart were found to be inflamed. Cattle also suffered in that country. 'Calves were very differently reared then, and many of them died in the attempt; the bloody murrain (carbuncular anthrax) prevailed much among horned cattle this spring and summer, and many of them have died of it.'²

The Cattle Plague continued to destroy the herds in Poland, Prussia, and Italy.

In the Bavarian Alps, anthrax appears to have been frequent, according to Laubender. 'The disease raged solely in the Alps, and only in such places as had marshy ground, as in the valleys; on the dry Alps it was not seen. Further, on many of the Alps the diseased animals had no tumours or boils (*beulen oder geschwülste*); upon others, however, all the cattle, without exception, were attacked with these. Nearly all the tumours were on the extremities. After rain the disease was less prevalent; but when the heat followed the rain it became aggravated. At this time, also, a deer was found dead in the wood; it was opened, and the same morbid condition of the spleen was observed as is found in the cattle which die of this malady.'³

In France, variola ovina was very destructive among the flocks in Crease.

A.D. 1803. The winter was long and cold, with much snow. On the nights of the 5th and 7th of March, red snow was observed on the mountain Tölmezzo in Friuli. Red rain and snow fell at the same time in Vienna, and passed over Italy and Sicily, coming from the south-east, attended with lightning, thunder, and hail. A cinnamon-coloured dust was associated with this, which on examination was found to contain eighteen species of polygastric animalculæ, one of which, the *Synedra entomon*, is known only in South America.⁴

¹ Mem. Medical Society of London, vol. vi. p. 576.

² Faulkner's Journal.

³ Laubender. Op. cit. vol. ii. p. 11.

⁴ Ehrenberg. Passat-Staub und Blutregen, pp. 107, 129.

On the 26th April, a wonderful shower of meteoric stones occurred at L'Aigle, in Normandy; the largest weighed $17\frac{1}{2}$ pounds.

Influenza appeared in mankind in England and France. In this country it manifested itself in January, but it was believed to have been observed at Whampoa, China, as early as 1800.¹ Animals were affected before or during the epidemy. 'Previous to the appearance of influenza, I understood there was some contagious disease among the horses About January a great number of cats in Shrewsbury were seized with what is commonly called the "houst," swelled heads, defluxion from the nose and eyes, with vomiting, sometimes purging, sometimes costiveness. Some died and others were relieved by opening medicines. At the time the human species became a prey to the influenza, the dogs and horses were evidently affected; many dogs were killed as mad dogs, which were not hydrophobic.'² A disease among cats and cows was observed at Gosport, four or five months before the outbreak of influenza at that place.³ 'I have just learnt, and I have no doubt the information is perfectly correct, that several horses died very suddenly during the time the late influenza was at the worst with us. That during the close of the last year and the early months of this, horses were everywhere unusually diseased, that very many died (I knew a neighbouring farmer who lost three, and with difficulty saved several others), and that such were the apprehensions of the farmers for their horses at this time, it was a practice with those who thought the distemper infectious, to put large patches of tar upon the breasts of them by way of preservation; but many attributed, however, these disorders to the horses having eaten insects, which for many weeks were innumerable, and covered the fields in the most extraordinary manner, wherever there was any length of grass, and this, from the mildness of the season, was general in almost every field. These were covered with a sort of spider's web; and wherever you stepped these insects flew

¹ *Gluge*. Influenza, p. 124.

² Mem. Medical Society of London, vol. vi. p. 426.

³ *Ibid*. p. 576.

off in vast numbers. I noticed them many times ; they were a long-legged, indeed a sort of winged spider, I believe of the class *Diptera*, named *Oleracea*. A respectable gentleman-farmer, living near Modbury, on whose veracity I have the most perfect reliance, assures me that toward the end of March last and beginning of April, during the prevalence of the influenza, many of his horses and those of his neighbours were very much disordered ; the disease among them was called the squinsy, and was marked with the following symptoms : running at the nostrils, cough, sudden weakness, and loss of flesh (these are his own words). None died ; abscesses frequently formed and broke externally, between the cheek-bones, about the root of the tongue, and sometimes internally about the same situation. The same intelligent person, Mr. Parsons, tells me that in November and December last, dogs were generally affected with a disease, termed the houst ; which, he observed, seems to consist of a continual effort to vomit, and that froth and slime were thrown up by these efforts in considerable quantities : many of these animals were ill several weeks, and many died. In the advanced period of this distemper they were very subject to fits, as they call it, running here and there, and into pools and ponds ; several ran off and have not since been heard off ; they never attempted to bite, and therefore apprehensions which were at first entertained that they were mad were soon removed.’¹ In the month of February, two months before the appearance of influenza at Garstang, Lancashire, ‘a very fatal epidemic was predominant among the swine ; in the town and neighbourhood whole herds were swept off by it.’² During the prevalence of the influenza at Droitwich, cattle were unhealthy, especially cows and sheep, and a great many lambs died. Cats were also affected, and many perished. ‘A disease called the “black-quarter” was more than usually prevalent this spring amongst black cattle in the neighbourhood of Whitehaven, and was always fatal. Horses also suffered a slight degree of catarrh.’³

¹ Medical and Physical Journal, vol. x. p. 137.

² Mem. Medical Society of London, vol. vi. p. 379.

³ Ibid. p. 316.

In Dublin, 'dogs had sore eyes;' in Cork, 'many horses, during the prevalence of this disorder (influenza), were attacked with ophthalmia and cough.'¹ Blaine asserts that the distemper in cats was general throughout Europe, though unfortunately he does not quote his authorities for the statement. He says: 'Little similarity as there is between the dog and cat, yet they partake of this disease (distemper) in common between them; and each is capable of giving or receiving it from the other. This disease in cats puts on, now and then, a perfectly epidemic form. In 1803, it ravaged almost all Europe, and nearly one-half of the cats died of it. It produces cough, sneezing, running from the nose and eyes, with great wasting and weakness, and sometimes purging.'²

In the department of the Rhone, France, ovine small-pox caused much destruction among the sheep.

In southern France, anthrax destroyed many cattle, and people were infected from diseased animals.³

The same malady was epizootic among cattle in Switzerland, and men also were affected with the disease by transmission of the virus.⁴

In this year there was observed a strange and unaccountable epizooty of rabies among foxes in Europe, which, raging to 1830 or 1833, was not quite extinct even in 1838. The following is an account of it as it manifested itself in the Canton de Vaud, Switzerland:

'In the months of November and December, 1803-4, this disease showed itself in many neighbourhoods in the districts of Aubonne, Cossonay, Orbe, and Yverdon, at the foot of the Jura Alps, and about twenty foxes which were attacked by, or suspected of it, were killed. Foxes, when suffering from this malady, entered the towns, villages, and houses, in broad daylight, and pursued people and animals, and even dogs. They bit a man, dogs, and swine very severely; a circumstance not generally noticed in rabies (*wuthkrankheit*).

¹ Mem. Medical Society of London, p. 297.

² *Delabere Blaine*. Canine Pathology, p. 176.

³ *Gohier*. Mém. sur l'Epizootie de Trannois. Lyons, 1804.

⁴ Verhandlung d. Schweiz. Arztlich. gesellsch. 1830.

Several dead foxes were examined ; in one, the liver and the abdominal glands were found softened and putrefied-looking ; in another, the same appearances, but to a less degree ; in a third, nothing abnormal was noticed. In many foxes which were opened by order of the Sanitary Commission, there was discovered much inflammation of the larynx, the contiguous portions of the trachea, and of the œsophagus. Nearly all were very emaciated, and had no traces of food in the stomach or alimentary canal. The abdominal viscera were healthy. It was remarked that there was the greatest similarity between this disease and that which the veterinary surgeons termed "wuth," which is a kind of malignant quinsy. To keep the malady within bounds, a general hunt was instituted against the foxes, and from the month of February, 1804, nothing more was heard of this dangerous affection, either sporadically or epizootically, in the Canton of Waadt.¹

During the revolt of the Kandyans in Ceylon, the animals employed by the troops in their subjection, as well as the troops themselves, suffered much from the bites of leeches, which caused 'large, ill-conditioned ulcers.' It was also noted that where leeches abound sheep do not thrive.²

It has been regarded as a remarkable circumstance, that, for the first time, we have mention made in this year of what was supposed to be the spontaneous origin of rabies in Peru. Dr. Smith³ writes : 'This disease appears to have been unknown on the shores of Peru, until, in the excessively hot summers of 1803, 1804, when, as Dr. Unanue⁴ informs us, it broke out in the scorched valleys along the northern part of the coast, when it proceeded, with an epidemic course, southward to Ica and Arequipa. It is stated in the work just referred to, that of forty-two individuals bitten by rabid dogs, and who died in the town of Ica, the greater number died in from twelve to ninety days after being bitten. It appears that the foresight of the Viceroy, Abascal, had

¹*J. R. Kochlin.* Ueber die in unsern zeiten unter den Füchsen herrschende Krankheit. Zürich, 1835.

²*Marshall.* Historical Sketch of Ceylon. London, 1846, p. 15.

³*A. Smith.* Diseases in Peru. Edinburgh Medical and Surgical Journal, 1844.

⁴Observaciones sobre el Clima de Lima. Second edition, p. 67.

saved Lima from the ravages of this furious epidemic, for he ordered a general slaughter of dogs in the city. During my residence in Peru, I never witnessed a single case of declared hydrophobia, although, on several occasions, people were bitten when no bad consequences were known to result, the bite not being venomous.' The same writer, in another work, quotes the history of the outbreak as given by the Peruvian physician, Unanue, which is particularly interesting. This goes on to say: 'Neither in Peru, nor in the neighbouring sections of South America, were dogs ever known to be attacked by hydrophobia prior to 1803; but about this time the malady broke out, during the heat of the summer, in the valleys of the northern coast, from whence it extended southward along the maritime plains; having arrived at the city of Arequipa in the spring of 1807, while in Lima it was observed between the summer and autumn of the same year. Having collected all the necessary data for disclosing the origin of this disorder, and consulted in writing the physicians and well-informed persons who had witnessed its symptoms, I have already learned, 1. That this disease arose spontaneously from the increased atmospherical temperature of the years 1803 and 1804. It commenced on the northern coast, commonly called *Costa Abajo*, where the air was so heated that Reaumur's thermometer indicated the temperature of 30° in some of the valleys; the calms were extreme, and without the lightest breeze that could ripple the surface of the ocean; animals rushed into lakes and pools of still water to relieve themselves from the sensation of excessive heat, so that the season described by Horace was fully realised:

'Jano Procyon furit,
Et stella vesani Leonis :
. caretque
Ripa taciturna ventis.'

2. This disorder affected every sort of quadruped without distinction; and such was the degree of frenzy excited by it, that some animals in their fury bit and tore themselves to pieces; and, in situations where the heat was extreme, several men fell ill with all the symptoms of hydrophobia without

having been bit. 3. The malady attached itself more especially to dogs, and some of them suffered so mild an attack that their bite was not mortal; but the greater number were severely affected, and propagated the infection to their kind, to other quadrupeds, and to man. The mean and niggardly overseer of a sugar estate had distributed among his negroes, though advised not to do so, some head of cattle that died rabid; which he did under the impression that they were *tocado*, or touched with that disease, which in hot weather usually affects cattle from the mountains: and the result was that of the poor negroes who had partaken of this meat many died with symptoms of hydrophobia. 4. In the towns of Ica and Arequipa the number of individuals who died, after having been bit by mad dogs, was greater, and their cases less equivocal than the preceding. In Ica a single rabid bitch bit fourteen persons in one night, of whom eight were in one house, some sleeping *al fresco*, or in the open air, others were variously occupied, and the remaining six were among those who, on hearing the alarm, ran to assist in killing the bitch. The surgeon of the place, Don Mariano Estrada, wished to persuade them to submit to be cured, but they rejected his proposal, saying the will of God should be done: and all died with the exception of two men, the one twenty-eight and the other fifty years of age, who agreed to be placed under medical treatment. The physician cured them, happily, on the safest plan, which consists in applying a blister on the part bitten, with a view to promote suppuration from it, and in exciting salivation by means of mercurial inunction. In the city of Arequipa it was much disputed whether or not the malady was a legitimate hydrophobia, and very learned papers, *pro* and *con*, were written by the doctors Rosas and Salvani. In this paper-war much time was lost that should have been taken advantage of for resisting the progress of the malady. True it is, that in many cases those disorders, which by frightened imaginations were represented to be real examples of hydrophobia, were, in point of fact, no such thing; and the alarming misconceptions thus induced were soothed down and removed by persuasive means. Hence, this circumstance,

which was the natural consequence of the general panic existing at the time, led Professor Salvani to think that it was precisely the same in all instances, until at length a succession of melancholy results declared the real nature of the disease. Immediately upon being made acquainted that the epidemic hydrophobia approached the capital, the Viceroy of Peru, Abascal, ordered all the dogs in the place to be killed,¹ by means of which he liberated Lima from the impending scourge, for though a very few hydrophobic patients entered, in this period, into the hospitals, they were not inhabitants of the city, but some individuals who had come in from the neighbouring farms and valleys. 5. When this calamitous epidemic commenced in the valleys of Costa Abajo, Don Jose Figueroa, Bachelor of Arts, wrote me to say, "That the dogs went about with their tails between their feet; they slavered much; hid themselves from human sight; howled lustily; and presently they fell down and moved no more: as remedies in these cases, cutting off the ears and giving oil were tried in vain. The cats, with their hair on end, ran about the house-tops. Horses and asses got enraged the one against the other; they threw themselves on the ground, rolled about, and instantly on being dead they swelled and putrefied. Black cattle—roaring and lowing—bounded about, fought with each other, in the contest even broke their horns, and they died quickly." 6. Professor Estrada confidently stated that of forty-two individuals who died in the city of Ica, after having been bit by mad dogs, the greater number were cut off

¹ The slaughter thus commenced has passed into a custom of annually destroying these confiding companions of man, when the howl or piteous death-cry of the poor animals rings upon the ear, on fine summer mornings, as the watermen are employed in knocking them down with their iron-pointed sticks in all the streets, and even at the very doors or gates where the persecuted creatures seek protection in vain. To see them dragged along the streets, bound together by the waterman's lazo, leaving a bloody track behind them, and then heaped up in the public squares, where they are often allowed to lie for days, is truly one of the most painful and disgusting sights which Lima presents, and to which the bloody scenes of the bull-ring are comparatively nothing.—*Translator*.

The same dismal proceeding used to be enacted at Kertch, according to Prince Demidoff.—*Travels in the Crimea*.

¹ According to Tennant, Ceylon witnesses a similar brutal mode of dog-extermination.

from twelve to ninety days after the accident. The symptoms which followed the engraftment of the poison disclosed themselves in the form of convulsions, oppression at the breast, sighs, sadness, laborious breathing, horror at liquids and shining objects, fury, vomiting of dark bilious matter, and an incessant urgent call on the part of the patients that the assistants should depart from them, because they felt themselves impelled to attack, bite, and tear them to pieces : none in this state survived beyond the term of five days. Since the year 1808, this terrible epidemic has been disappearing. From time to time, however, a dog may be seen running violently hither and thither, and biting all whom he may happen to meet, in the same way as is done by the really mad dog. But, in the instances in which no bad results arise from the bite, they may be considered of the same character with the disorder observed by Mr. Colombier, which attacks dogs, renders them furious, and excites them to bite, but has, nevertheless, nothing at all of hydrophobia in it. Still, however, the safest way is to kill the dogs thus affected, and to implore the Father of Mercies that these regions may never again experience so severe a visitation.'

While referring in this work to the outbreak of rabies in various kinds of animals, it may not be out of place to allude here to the strange European disease—the '*Plica Polonica*'—which more particularly manifests itself by attacking the human hair, but also affects the lower animals—horses, cows, sheep, dogs, wolves, foxes, and other creatures being liable to its peculiar effects. The malady is known from the source of the Vistula to the Carpathian Mountains, but prevails more especially in Lithuania, White and Red Russia, and in Tartary. Those animals which have very long hair are most susceptible to its visitations ; fowls are exempt. In the Milanese, the tails of some horses show signs of the malady, which in this form is designated *foletto*. According to Lafontaine, a great number of dogs are destroyed, because the '*plica*' induces in them nearly all the symptoms of *rabies*. 'Indeed,' he remarks, 'they drag their tails between their legs, they foam at the mouth, they scarcely ever bark, and they bite at every-

body, even their masters, whom they appear to forget ; they lose their appetite, go about as if they were blind, and run against the walls ; but they drink much more at this stage of the disease than they are wont to do in health, and their bite is not followed by hydrophobia. The same symptoms are witnessed in foxes, wolves, sheep, etc. Horses, when affected, become emaciated, feeble, lose all their spirit, scarcely eat anything, but drink a great deal ; the ‘ plica ’ with them only attacks the mane and tail.’¹

A.D. 1804. The year was exceedingly unfavourable for the crops, and wheat was greatly damaged by rust.

During the winter of 1804-5 there was an epizoöty among horses in Holland, Germany, and the North of France. It was designated a ‘ comatose fever,’ and also encephalitis ; but from the description it appears to have been only a particular form of the protean malady, influenza.²

In April, anthrax was epizoötic in the March of Brandenburg, on the banks of the Spree. By the Council of Health it was believed to be due to the deleterious influence of the Columbacz flies (*Rhagio Columbacensis*).³

¹ *Lafontaine*. Traité de la Plique Polonoise. Paris, 1808.

² *Collaine*. Sur le Fièvre Adynamique Comateuse qui a été Epizoötique dans la Holland.

³ *Laubender*. Op. cit. vol. ii. pp. 169, 173. In the former volume on ‘ Animal Plagues ’ (year 1790, p. 531), mention was made of a malady resembling, in its local manifestations, a particular form of anthrax, and which was ascribed to the attacks of this insect. We have only now to remark that the creature is known as the ‘ fly of Columbacz ;’ it belongs to the family of *Culicidæ*, and is identified by entomologists as the *Simulia maculata* ; it frequently causes the death of the animals it attacks. It is most frequently met with in the southern parts of Hungary and in Servia, and on several occasions it has been seen in Austria, Moravia, and in the regions adjoining Hungary, along the March, after more or less extensive inundations. It makes its appearance during the first half of April and the commencement of May, and sometimes in such numbers that seen from a distance the swarms look like clouds, and it is scarcely possible to respire without swallowing them. They prefer to attack the eyes, nostrils, mouth, anus, and the genital organs of horses, cattle, and sheep, introducing themselves in great numbers by the natural orifices. Every sting causes the development of a hard and painful tumour, which does not disappear until after from eight to ten days. If, as not unusually happens, herds are attacked by a swarm of these insects, very many sometimes die, in consequence of the extensive and painful lesions, as well as of the inflammation of the pharynx and larynx, and the obliteration of the bronchi from the entrance of the creatures. They derive their popular name from the supposition that they were bred in the

In this and the following year, ovine variola was general in Saxony.¹ At the end of the summer, in Haute-Garonne and the environs of Saint-Gaudens, in France, an epizooty of inflammation of the vascular membrane of the horns of cattle (*catarrhe des cornes*) appeared.

At Crema, in Italy, a mad wolf descended from the mountains in November, and bit thirteen people, nine of whom died of hydrophobia.²

In Wurtemberg and Baden, the rabies in foxes was attracting much attention, and the Government of the former country had, with much care and solicitude, investigated and published its history. It is as follows: 'Since 1804, there has appeared on the northern side of Lake Constance and the neighbourhood, a disease which had not been previously seen among foxes. Contrary to their usual shy disposition, they followed men, horses, cattle, sheep, goats, dogs, cats, and other animals, and sought to injure them, and fell at last into an exhausted and very much emaciated condition. At the end of the year 1808, this disease appeared in the then kingdom of Wurtemberg, and in Hornberg, in the Grand Duchy of Baden. Not only cattle, but also dogs were injured by them, and died from rabies. The same accident occurred to an ox in Oberamt Blaubeuren, and to four head of cattle of various ages at Shuppach, Oberamt Oehringen, in the same year. Since then a great number of cases, more or less frequently, have happened, where diseased foxes have infected with rabies, by their bites, cattle, sheep, dogs, and cats, and this not only in the greater part of Suabia, but also in the middle Rhine, and in several cantons of Switzerland. It was especially frequent at the end of 1827, and since then in the upper portion of Wurtemberg. Many men were bitten by these diseased foxes, but usually, by being at once attended to, they escaped danger. Not a few animals which were

caves of the limestone mountains in the vicinity of the old castle of Columbaz; but the fact is, as remarked by Röhl, that they, like the other *Culicidæ*, undergo their various transformations in the water, and they only take refuge in the caves during unfavourable weather, when they have been completely developed.

¹ *Tolberg*. *Erfahr. ueber die Pocken d. Schafe*. Magdeburg, 1805.

² *Brera*. *Prospetto del Clinica Med. di Padova*. 1819, 1820.

bitten, and left without treatment, yet remained unaffected. These exemptions lead those connected with hunting pursuits into the fallacious reasoning that the malady was not contagious; but these cases of insusceptibility have been observed when animals were wounded by others violently rabid. The differences in the results depend upon the character of the wound inflicted, the susceptibility for the reception of the poison, and the poison itself. Apart from the painful position in which the people were placed who were bitten by these rabid foxes, it is partially proven, and in part highly probable, that three persons became the victims of hydrophobia. At the end of April, in 1815, a cat at Seehaushof, Leonberger Oberamt, had a scuffle with a fox that was attacking the poultry. On the 21st of May following, a servant-maid, who had hitherto been remarkable for her hale and hearty appearance, observed the cat to have staring and fixed eyes, whereupon it was killed the next morning. The servant was injured by this animal, and medical treatment was delayed for four-and-twenty hours. On the 25th of August, after feeling slightly indisposed, the symptoms of hydrophobia appeared, of which affection she shortly died. In March, 1825, two sick foxes came to the stable of Captain Weber, in Rettstall, in the Canton of Glarus, where there were a bitch and two pups. The mother had a struggle with these foxes, and was attacked with rabies early in April, and bit her master, her own pups, and several other dogs. Weber was opposed to medical treatment, and on the 9th of August the first symptoms of the terrible disease manifested themselves in him; these were followed in a few days by the active and full development of the malady, and in a short time he died. According to a communication from the Duchy of Baden, rabies showed itself in a child which had been bitten by a strange cat in the fields, notwithstanding all precautions and medical treatment. This cat had in all probability been bitten by a diseased fox. As rabies is transmitted to man from foxes through the medium of dogs and cats, so is it also conveyed to cattle. . . . The direct transmission of the disease to dogs has frequently been

observed, especially since last year. In Seissen, a sporting hound belonging to the forester of that place, sickened after an encounter with a fox, and bit two men and a dog. The men, who were carefully treated, escaped, but the dog died from rabies. According to a report made to an official at Blaubeuren, the hound of an assistant forester at that place had a scuffle with a fox about the end of December in 1827, and four weeks after it was attacked with rabies and died. In Waldsee a fox and a dog fought, and the former was killed; on examination of its body not the slightest lesion was apparent, either externally or internally; but the dog after five weeks became mad and died. In the neighbourhood of Geisslingen, a fox attacked the miller's dog. This animal remained healthy for six weeks, sickened in the seventh, and soon thereafter died raging mad. Since the general appearance of this fox disease, it has been suspected that the semi-domesticated cats which frequent the fields have suffered much from this malady. As the infection has not always had the same results, and also from the absence of the usual symptoms of rabies in the sick foxes, the erroneous impression has gained ground that it is an entirely distinct disease, and which has been called the *beiss-sucht* (desire to bite). At the commencement of the disease there is, beyond the endeavour to injure men and the larger animals, nothing whatever to be seen, either externally or internally, inconsistent with a perfectly healthy state, although such creatures have the power of communicating the malady. Later, without being able to name a certain period, they appear to have rough coats, and are much emaciated. On opening their bowels, there were found along with the ordinary contents substances altogether foreign—such as stones, sand, straw, etc. When the disease does not kill them so quickly, they become greatly debilitated, yet retain the desire to bite, and succumb with slight convulsions. In various stages of the disease, the mucous membrane of the air-passages and digestive organs is inflamed and congested, but never shows any signs of supuration; the spleen is enlarged; the liver altered in colour; the gall-bladder varies in size in almost every animal; the hair comes easily from the skin, which is here and there

covered with a peculiar kind of eruption, quite distinct from the scabies of foxes.¹

A.D. 1805. The year was generally cold, but especially in the spring. During this and the preceding year, catarrhal affections were rife in mankind. An epizooty of influenza appeared among horses in Germany, which was particularly remarkable for the regular manner in which it travelled from one place to another. It was often complicated by pleuritis and pneumonia, and resembled the influenza of man in being of a benignant type in some regions, and malignant in others. Its course, as it extended from north to south, was rapid. In the winter it was present at Copenhagen; at the commencement of the spring it was observed at Hamburg and in Holstein;² in the beginning of March it was in Hanover,³ at Osnabruck,⁴ and at Munster, near Cologne;⁵ on the 18th of March it manifested itself at Aschersleben, in Madgeburg; in April it was on the banks of the Lahn, in Nassau, and in Upper Hesse;⁶ in May it appeared at Dresden and Berlin;⁷ and in the South of Germany the malady was noticed in Franconia, in Wurtemberg, and in Oberpfalz.⁸ In the latter countries it was designated the 'Hanoverian Horse-Plague' (*Hannoversche pferdseuche*), and in other places the 'Spanish head-disease of horses' (*Spanischen Kopfkrankheit d. pferde*). As before stated, this influenza did not in all places assume the same character, nor were its complications everywhere alike. To its special and most marked characteristic it owed the different denominations it received. In the Duchy of Holstein it appeared as an adynamic fever, and the accompanying catarrh of the mucous membranes was complicated with pleuro-pneumonia, hepatitis,

¹ Sammlung d. d. Veterinärpolizei in Würtumb. betreffenden Verordnungen, p. 218.

² Fiedler.

³ Havemann and Sander.

⁴ Giesker.

⁵ Fehr. Ausfürliche Beschreibung d. Brustseuche d. Pferde. Göttingen, 1806.

⁶ Franque. Thierseuchen, p. 25. Pilger. Darstellung des Verlaufs d. Sogenannten Spanischen Hopfkrankheit d. Pferde. Hanau, 1805. *Kopp*. Topographie von Hanau, p. 166.

⁷ Reuter. Neumann. Ueber d. Heerschende Pferdeseuche, in den Berlinischen Nachricht. d. Staats-und Gelehrtensacheh. 1805.

⁸ Plank. Veterinärtopographie von Baiern, p. 138.

and œdematous swellings containing blood-coloured serum; a sanguineous and purulent discharge also escaped from the eyes and nose. After death the lungs were found gorged with blood; they were also sometimes hepatized, and contained vomicæ filled with pus; at other times there were adhesions of the pleuræ, with intra-thoracic effusions. The liver and spleen were, according to Viborg, in the same condition as the lungs. The mucous membrane of the intestines was marked by brown spots; and from this peculiar appearance, the veterinary professor at Copenhagen defined the disease as a complicated putrid fever. In Austria, which it also visited, it offered somewhat the same characters, and was named by Wollstein (Director of the Veterinary School at Vienna) a malignant putrid fever, complicated with inflammation of the lungs and liver. The malady was also termed a nervous fever, and an acute typhoid catarrhal fever. It was less severe in Hesse, where Pilger named it a benign nervous fever. At Berlin it was very mild in its attacks; and the Director of the Veterinary School there reports, that out of four hundred horses admitted into that institution not one died, and that the symptoms were those of bronchial catarrh, attended by a slight fever. Nevertheless, he also styled it a nervous fever. Neumann was the only one who perceived the relation of this epizooty in horses to epidemic catarrh in man, and consequently thought it should be distinguished by the same general appellation; so that from this period, according to some writers, dates the introduction of the term 'influenza' into veterinary nosology.

In England, 'distemper' in the dog must have assumed an epizootic and a severe form, for Blaine,¹ speaking of this malady, observes: 'When it shows itself as an epidemic, its versatility of character in different seasons is often remarkable. In the summer of 1805, many of the distempered subjects were attacked with a peculiar and painful spasmodic colic, which neither constipated nor relaxed the bowels, but, after continuing acute two or three days, usually terminated fatally.'

¹ *Blaine. Op. cit. fifth edition, p. 51.*

In November, cattle plague, or a malady believed to be that pest, broke out in the village of Stretton, in Warwickshire, and necessitated the enforcement of severe sanitary measures.

In Italy there was an epizooty among pigs in the district of Panaro.¹ In the department of the Seine-et-Marne, France, much loss was sustained through the presence of small-pox among the sheep.

In this year the 'Spanish foot-rot,' a contagious disease of sheep, mentioned for 1791², appeared for the first time in Switzerland, Piedmont, and some other countries.³

Dr. Römmer had the opportunity of observing an epizooty of 'rot,' accompanied by flukes in the liver, amongst the ruminant animals of Glatthale, Canton Zurich, in this and the next year.⁴

A.D. 1806. In England, rabies in the dog was unusually frequent. Blaine remarks: 'In 1806 rabies among dogs became very common in England, and abounded in the vicinity of London. In the two succeeding years it also continued to rage; after which, for several subsequent years, it was less prevalent; but it never became apparently extinct or rare as before.'⁵

In the month of February, rabies in foxes began in the country around Bodensee and in the Duchy of Baden; and Grüter⁶ of Weingarten describes it. It appears that as yet its transmissibility had not been fully established, though all the foxes were dying. 'From what has been said, it is clear that the disease resembling madness which has been raging among the foxes is not communicable to other animals by their bite, and that, consequently, it is not hydrophobia. Whatever it has been, and where it has come from, I leave others to judge; but it seems to me important, with regard to the natural history of the fox, and the interest taken in the subject by sportsmen, to make this communication. Up to the

¹ *Misley*. Descr. della Malattie Serp. su i Majali nel Dipartim. del Panaro. Modena, 1805.

² See Vol. I. of this work, p. 532.

³ *Heusinger*. Op. cit. p. 123.

⁴ *Wirth*. Op. cit. p. 123.

⁵ Op. cit. fifth edition, p. 99.

⁶ *Journal für das Forst*, 1807.

commencement of the month of March, 1807, a mad fox had been occasionally seen; since that time we hear nothing of these animals—no doubt owing to all the foxes in the neighbourhood having been destroyed by the disease. In those districts in which, in other years, the huntsman knew of ten or more litters of young foxes, there is now not a single fox to be seen; neither do we find any traces of old foxes; so that it may be taken for granted that in a district of about ten square miles all have perished.’

A.D. 1807. The spring was cold and damp, but the summer very hot. Anthracoid diseases were exceedingly prevalent in every part of Europe. In Bavaria a severe outbreak of anthrax is reported: ‘Although the anthrax (*milzseuche*—splenic apoplexy) has appeared since 1807, it has never attained the virulence, nor spread so widely, as in that year. . . . It was severe and extensive in the district of Landsberg, where it began on the 17th June, and by the 24th of that month it had already invaded more than twenty places. It lasted 115 days, and was most fatal to horses, though cattle suffered considerably. Swine and sheep were also attacked, and in the woods were found stags, roes, hares, foxes, and badgers which had evidently died from the disease. . . . The malady was also particularly dangerous to mankind, for of thirty people who were infected fifteen died.’ The writer of this notice—Schwab—believed, nevertheless, that the disease was not contagious, and adds: ‘The chief reason for supposing the affection to be contagious is the presence of the so-called “malignant pustule,” or “blackpock” (*schwarze blatter*), which can be transmitted to mankind by inoculation with the virus. But this evil result arises, even when it terminates fatally, not as in the anthrax, but as in those other diseases which are communicated by the introduction of animal poisons. Such a poison is present in the blood and serum in this malady, and in some particular fluids; but it is not a pure contagium, or as some people prefer to term it, a germ disease (*krankheitssame*).’¹

¹ *Schwab.* Beiträg. zur Theor. u. Pract. Veterinär-Wissenschaft. Munchen, 1832.

This malady was also present during the summer in the Tyrol,¹ in Prussia, Nassau, Sossenheim, Weilbach, Königstein, Idstein, Usingen, and at Hamburg, in August and September;² also in Austria and Hungary.³

In many villages in Friuli, but chiefly in the vicinity of Portogruaro and Latisana, there appeared a disease among cattle which was commonly named the 'piscia sangue' (asthenic hæmaturia?). It began in July and terminated in August.⁴

A mad wolf appeared in the department of Isère, in France.⁵ In Ireland, canine rabies was prevalent in the spring.⁶ Catarrhal fever, influenza, or, as it was designated, brain-typhus (*gehirntyphus*), was epizoötic in East Prussia. It has been described by Ammon, and appears to have shown itself first among the highly-fed, well-bred horses on the domains situated near the high-roads.⁷ In 1807 and 1808, glanders was epizoötic in France. Wirth writes: 'In the latter year (1808) it was most destructive in and around Boulogne, and was believed to owe its appearance there to a knavish horse-dealer, who brought about twenty diseased horses to be sold in that town. These were purchased by various individuals dwelling in different places; and in this way the healthy horses became infected.'⁸

In the departments of Aube and Gers, France, the sheep-flocks were nearly exterminated by small-pox.

In 1806-7, during a fatal epidemic in Ceylon, elephants, wild-boars, deer, and other animals, died in immense numbers.⁹ The malady was in all likelihood of an anthracoid nature, the disease in mankind being due to malarious influences. It has been repeatedly observed in other parts of the world, that the epidemic intermittent fever of man often coincides with the outbreak of anthrax in the lower animals. (See also the year 1816.)

¹ Justiz und Polizey Fama, 1807.

² *Franque*. Op. cit. ³ *Waldinger*. Therap. d. Fieberh. Krankheit. vol. i. p. 21.

⁴ *Bottani*. Op. cit. vol. viii. p. 331.

⁵ *Pierquin*. De la Folie des Animaux, vol. ii. p. 83.

⁶ *Faulkner's Journal*.

⁷ *Wirth*. Op. cit. p. 419.

⁸ *Ibid.* p. 419.

⁹ *Marshall*. Medical Topography of Ceylon, p. 16.

During the operations of war on the continent between the years 1805 and 1809, the Cattle Plague ravaged Austria and Prussia. This year it appeared in the principality of Dantzic, the events of war bringing Russian armies with their droves of Steppe cattle into that locality. Wherever the Russian or Austrian troops penetrated, there this pestilence manifested itself, and by these movements Prussia, the whole of Central Germany, and the German States in the south, suffered fearfully even until 1814.¹ 'Whilst the operations of war were in a great measure confined to the west, the plague returned to the Russian Steppes; and in 1806, when the Cossacks of the Don, in obedience to an urgent appeal of Alexander, mustered on the Vistula, the malady spread from the desert-lands into the agricultural districts of Lithuania, Prussia, Silesia, and Kurland. Napoleon's retreat after the battle of Eylau (1807) favoured the spread of the Contagious Typhus, and it prevailed in the above and adjoining provinces for two entire years, almost exterminating the cattle. When the Grand Army advanced to Moscow, and penetrated the heart of Russia to meet with defeat and famine, all conditions favoured the extension of disease and the spread of pestilence.'²

A.D. 1808. An epizooty appeared among the horses in North America.³

A.D. 1809. Small-pox in the dog (*variola canina*) was observed among those in the kennels of the Veterinary School of Lyons. 'In 1809 there was observed an eruptive malady among the dogs, to which they gave the name of small-pox. It appeared to be propagated from dog to dog by contagion. It was not difficult to cure, and quickly disappeared when no other remedies were employed than mild aperients and diaphoretics. A sheep was inoculated from one of these dogs. There followed a slight eruption of pustules around the place of inoculation, but nowhere else, nor was there the

¹ Renault. Mémoire sur le Typhus Contagieuse des Bêtes a Cornes.

² Gamgee. The Cattle Plague. London, 1866, p. 310. See also Salis Marschlins. Streifereyen in den Französichen Jura. Winterthur, 1805.

³ Drayton, p. 97.

slightest fever.¹ It may be observed that this is not the first mention of this contagion in the dog, as M. Barriere,² veterinary-surgeon of Chartres, in 1791, accurately describes it as he witnessed it on three occasions. He also remarks that in the 'Ephemerides d'Allemagne' mention is made of a dog that caught the infection from a person with whom it slept, and who had small-pox; and M. Huzard relates the following fact *apropos* of the transmissibility of this disease to different species: Some sheep died of the small-pox (*clavelée*), and were left in a ditch. A pack of hounds passing began to devour the carcasses, and seventeen of them became ill. It was at first thought they had 'distemper,' as they lost their usual gaiety, grew weak, paralytic in the loins, and discharged a viscid green matter from the nostrils; but a plentiful crop of inflammatory pustules soon appeared, and proved the sickness to be malignant small-pox. Eleven of them died, and the helper at the kennel was seized with illness, and had his hands and face covered with pustules. Barriere also speaks of a monkey that caught the small-pox from some children with whom it was accustomed to play; and likewise of another who received the measles from a child on whose bed it was accustomed to lie. It had all the symptoms of measles except the cough; and instead of that, there was a violent heaving at the flanks. The same medicine was given to it as to the children, and the eruption and its disappearance were precisely like those of the human being. The monkey was a very small one, and its pulse could scarcely be counted because of its extreme rapidity; but when, at length, it was examined at the axillary artery, it was found to number about 400 per minute!

Leblanc, of Paris, has contributed an excellent monograph on this canine variola, in which the symptoms, peculiarities, and the treatment of the malady, together with his attempts at inoculation, are lucidly described.³ He arrived at the following conclusions: 1. That the disease is very frequent in the dog;

¹ *Hurtrel d'Arboval*. Dictionn. de Méd. Vétérinaire.

² *Barriere*. Instructions Vétérinaires, 1791.

³ *Leblanc*. Journal du Haras, 1841.

2. That it is contagious in this creature, as it is in other animals; 3. That inoculation gives it a milder character, and that this operation should undoubtedly be practised when variola is prevailing among dogs in any district; 4. That very simple treatment is required when the disease runs its regular course; 5. It results from what has been stated, that the vaccine disease cannot be communicated to the dog by inoculation.

It is to be observed that Gohier and Numan experienced great difficulty in successfully inoculating dogs with vaccine; perhaps owing, as Heusinger suggests, to their experimenting on old animals. Sacco and Viborg, on the contrary, found this inoculation comparatively easy.¹ Some years ago, a sheep died of small-pox at the Lyons Veterinary School. A portion of the skin was attached for twenty-four hours to a healthy sheep, and another part to a dog, likewise in apparent good health. No effect was produced on the dog, but the sheep died of confluent small-pox. The results of various experiments in inoculation are singularly contradictory. Many were carried out by MM. Campe and Voison; others were instituted at the Ecole de Médecine, of Paris, and elsewhere, chiefly with a view to test the transmissibility of human variola and that of sheep. The results of these certainly demonstrated that no benefit was to be derived from inoculating the animals with small-pox virus of the human subject, or *vice versa*; for sheep which had apparently been successfully inoculated, nevertheless took their particular variola by simple cohabitation with infected individuals. Thus vaccination, believed to be a preservative from variola in man, does not prove at all efficacious in that of sheep. It has been imagined that the sheep small-pox might, if judiciously inoculated, turn out to be a new preventive of human small-pox; and to this end, children of different ages have been submitted to the test; but the punctures were only followed by a little superficial irritation, without any pustular development or suppuration. After these experiments had been repeated several times with the same results, these

¹ Sammlung, Band iii. p. 169.

children were successfully vaccinated. To make certain of the lymph employed in these trials being of undoubted quality, several sheep were inoculated at the same time with the same virus, which promptly produced the usual effect on them. Other experiments have been resorted to, and birds of different species, neat cattle, horses, rabbits, dogs, and monkeys, have been inoculated, but with no success. There is certainly something strange and inexplicable in the fact, that vaccination only protects mankind from variola, and that in all other creatures it should be impotent to render their bodies insusceptible to the influence of the variolous affections to which they are liable.

'Rot' (*cachexia aquosa*) in ruminants was extremely prevalent in France and Germany.²

Sander³ observed the typhoid or bilious fever (*lebertyphus*) of horses in the harvest of 1809, at Bahrdorf, in Switzerland. Papenrode³ also reported it in Brunswick. It followed the overflowing of the pastures; and appears to have been a kind of influenza, chiefly marked by serious complications of the biliary apparatus.⁴

¹ *Hurtrel d'Arboval*. Op. cit. *Wirth*. Op. cit. p. 123.

² *Sander*. Vermischte Beiträge zur Praktischen und Gerichtlichen Thierheilkunde. Berlin, 1810.

³ *Wirth*. Op. cit. p. 137.

⁴ The epizooty designated in popular phraseology 'influenza,' and which we have already referred to so frequently in this history, is the epizooty, *par excellence*, of the horse in western, and perhaps even in eastern and northern countries. Its mutability as it appears year after year—its chameleon-like invasions, when it shows itself as a disease not only of varying intensity and fatality, but as one which, though marked by special characteristics, yet offers the widest diversity in its manifestations—has obtained for it an extensive list of designations, according to the type and the complications it may assume at different invasions. Thus it has been named, in addition to its world-wide 'influenza' title, *typhose* by Lafosse (1868), *epizootic gastro-enteritis*, *gastro-entero-nephro-hepatitis*, *gastro-hepato-spinal-meningitis*, *entero-pneumo-carditis*, *epizootic pleuro-pneumonia*, *gangrenous pleuro-pneumonia*, *typhoid pleuro-pneumonia*, *general spontaneous phlegmasia*, *complicated peripneumonic fever* (Nobis), *gastric fever*, *gastro-catarrhal fever*, *mucous fever*, *typhoid fever*, *epizootic catarrhal fever*, *epizootic nervous fever* (Anker), *complicated rheumatismal fever* (Spinola), *cocotte* (German, *gallichter typhus*, *typhus biliousus*), *lebertyphus*, *abdominal or gangliontyphus*, *gehirntyphus*, *seuchenartiges katarrhal-fieber*, *typhöse lungenseuche*, *sumpfieber*, *nervenfieber*, *ansteckendes nervenfieber*, *akuter rotz*, *pferde influenza*, *Russische krankheit*, *blitzkatarrh*, *typhöse seuche*, *Spanische feuer*, etc. These numerous, and generally sufficiently expressive, names may suffice to convey an idea of the multiform characters the disease, at different periods and in different countries, assumes.

From this year until 1812, the madness of foxes had been observed in the Canton of Zurich. 'In the protocols of the Sanitary Commission of Zurich, no notice was given of a disease among foxes until the year 1809. Under date of the 1st November of this year, the Sanitary Commission of the Canton Aargau reports that in the neighbourhood of Baden, for some days, the foxes had shown strange symptoms, which were quite unnatural to them. They had approached the dwellings of men without fear, and very soon after a herdsman and a cow were injured by them. According to an official account of the 23rd June, 1812, several infected foxes had shown themselves in the vicinity of Neftenbach. On the 27th March, a man met a fox in a wood ; this animal offered battle and was killed by the man. The same individual found a fox at the door of a dwelling ; this creature likewise manifested a like inclination to do injury, and was also destroyed. A fox came into a yard, bit a dog, and both were killed. On the 30th April, another man discovered a fox before his house as he was driving his goats to pasture ; the fox attacked one of the goats and wounded its head ; whereupon the owner slew it. On the 4th May, a woman of Neftenbach was attacked in the neighbouring vineyard by a fox, and bitten in the leg. From 1812 to 1819, we find no trace of a disease among foxes in the records of the Sanitary College.'¹

An epizooty of ekzematous fever (foot-and-mouth disease) appeared in many countries of Europe, but more particularly in Germany. In some places it only attacked cattle, but in others cattle and sheep were affected. It showed itself in Nassau, where it was reported upon by Franque;² and in the month of June in Wurtemberg.³ An outbreak of glossanthrax is stated to have taken place among the cattle and horses in the Canton Zurich⁴ in that month, but this may possibly have been the ekzematous or aphthongular malady. At any rate, the epizooty was very prevalent in France and Italy, in which countries it appears to have remained until 1810 and 1811.

¹ *Köchlin.* Op. cit. p. 6.

² Op. cit. p. 165.

³ *Sammlung v. Verordnungen*, p. 70.

⁴ *Laubender.* Op. cit. vol. ii. p. 317.

D'Arboval¹ notices its continuance and spread. 'The disease which in 1809 extended over different countries of France, and which was particularly observed in the capital and the vicinity of the Alfort College, continued, in 1810, in the department of Calvados to the environs of Lyons and elsewhere, and attacked cattle and sheep; it reigned also at the same time in Italy. Generally but little redoubtable in its effects, it announced its presence in a similar manner in all animals: it offered the same characters, exhibited no varieties, and passed through its phases without producing much derangement, usually terminating in the period of from ten to twenty days. In the two species of ruminants attacked by it, there appeared in the interdigital space an ulcer which produced acute pain, and prevented the animal from putting its weight on the limb. In 1810, in the neighbourhood of Lyons, besides the large number of cattle affected, it was remarked that sometimes monodactyles were attacked by it, as well as goats and pigs. At the same time it broke out in many other countries: in Switzerland, in the departments of Léman, in Arriège, Tarn, and other places.'²

¹ Dictionnaire, vol. i. p. 116.

² For the epizoöty in the valley of the Auge, see the description by *Huzard, senr.*

Précis sur l'Epizoötie des Bœufs de la Vallée d'Auge. Paris, 1810.

In the neighbourhood of Paris, *Girard, senr.* Recueil de Méd Vétér., vol. iv. p. 350.

In the department of the Rhone, the Comptes-Rendus de l'Ecole de Lyon for 1811, 1812.

In the Ardennes, *Dechain, Gohier.* Mém. sur la Chirurgie Vétér., vol. ii. p. 127.

In the Eastern Pyrénées, *Barrère.* Journal Générale de Méd., vol. xliii. p. 196.

In the Upper Rhine, *Berbier.* Mém. de la Soc. Roy. d'Agricul. du Départ. de la Seine, vol. xvi. p. 116.

In the department of Corrèze, *Neilhan.* Mém. de la Soc. d'Agricul., 1813, p. 48.

In the department of the Vosges, *Matthien.* Recueil de Méd. Vétér., vol. xii. p. 65. And for other parts of France, *Sainton.* Correspondence de Fromage de Feugré, vol. iv. p. 263. *Leschevin.* Annales de l'Agricul. Française, vol. xlix. p. 25.

For Switzerland, see *Saloz.* Comptes-Rendu de l'Ecole de Lyon, 1812.

For Germany, see *Sander.* Vermischte Beiträge zur Gericht. und Practischen Thierheilkunde. Berlin, 1810.

For Italy, see *Leroy.* Mém. publiés par la Soc. d'Agricul., vol. xv. p. 60.

In Holland, the epizoöty was studied by *Kraff.*

The Cattle Plague was extremely prevalent and destructive in Siberia during this and the two subsequent years.¹ It made many irruptions into Europe.²

A.D. 1810. Immense swarms of insects appeared in Germany. The larvæ of the May-bug destroyed the pastures, and those of caterpillars and coleopterous insects greatly damaged the pine trees in the forests.³ Locusts devastated Asia.⁴

In Bavaria, epizoötic or contagious pleuro-pneumonia prevailed throughout the year, and anthrax (*milsbrand*) during the summer.⁵ The latter disease committed great ravages among the horses and cattle. It was discovered that the best way of averting it was to send the cattle and other animals to the highlands of the Alps.

In the previous year, in this, and also in the following year, many animals died during the severe epidemy at Coimbatore and other places in Hindostan.⁶ Rabies in the dog was epizoötic in North America; at Ohio, not only were dogs affected, but wolves and foxes were mad in great numbers.⁷ It is also stated that an epizoöty among dogs was observed in England, in which it was observed that the bladder was, in almost every instance, very much inflamed, and in many cases exclusively so.⁸

Rot caused much destruction of sheep throughout England, but more particularly on the Lammermoors.⁹

Famine in Iceland during the winter, when, to preserve the cattle and horses, on which they chiefly depend, these animals were fed with chopped fish not only in the country, but even in the towns.¹⁰

¹ *Haupt*. Ueber einige Seuchenkrankheit der Hausthiere in Sibirien und dem südlichen Russland, 1845, p. 231.

² *Hufeland's Journal*.

³ *Schnurrer*. Op. cit. vol. ii. p. 490.

⁴ *Ritter*. Erdk. Asien., vol. vi. p. 792.

⁵ *Laubender*. Op. cit. vol. ii. pp. 337, 399. This author gives a very valuable and interesting description of the malady and the sanitary measures.

⁶ *Ainslie*. Report of the Epidemic Fever of Coimbatore, Madura, etc.

⁷ American Med. and Philos. Register, vol. i. American Journal of Med. Science, 1830.

⁸ *Blaine*. Canine Pathology.

⁹ *Fairbairn*. Treatise on the Cheviot and Black-faced Sheep.

¹⁰ *Hooker*. Tour in Iceland, vol. i. p. 347. Forbes informs us that in this severe climate, where the hay crop is so uncertain, famine in winter is not an unfrequent occurrence, as the cows and ewes perish for want of food (Iceland : its Volcanocs, etc., p. 25). Capell Brooke speaks of cattle being largely fed on fish

A.D. 1811. In Austria, Salzburg, and Silesia, the Cattle Plague was causing much loss.¹ It was also ravaging Siberia according to Jessen.² 'Besides other, and, in part, special maladies of the bovine species, the Cattle Plague (*Rinderpest*) has several times raged throughout the length and breadth of Siberia between the years 1810 and 1811, and in the middle of 1820, when it became so destructive throughout Europe, not even sparing this most remote region. The restrictive measures that were immediately adopted in Siberia were unsatisfactory, because of the great extent of country and the small population. On the first alarm, a veterinary surgeon was sent to investigate the nature of the disease in a herd—a third of which had already succumbed; but no satisfactory intelligence could be obtained, as the owner was prevailed upon to slaughter the remaining animals. The skins being tanned, the tallow melted, and the other portions of the bodies buried, the plague was stayed, until, at a later period, the infection broke out again by being imported from a distance. About the same time, the malady showed itself in a much larger herd at a distance of a few hundred versts, and to this the same veterinary surgeon was sent. . . . In this instance, also, time was lost; many head of cattle had been driven away from the herd, and this, as well as nearly all the neighbouring herds, perished, while the malady spread everywhere. The enormous number of cattle destroyed in these two periods alone, is shown by the lists.'

In Switzerland, in many cantons, but especially on the Saladier mountain, hundreds of young cattle died from the presence of filaria in the bronchial tubes of the lungs.

in Norway. The little hay gathered in the mountains is boiled up with the entrails and heads of the cod caught during the fishing season and carefully preserved for this purpose. Of this the cattle are amazingly fond. When the hay is exhausted, sea-weed is used. The branches of the birch and other trees are also cut and stored as fodder (Travels in Norway, p. 239). Forbes corroborates this statement (Norway and its Glaciers, p. 54).

¹ *Kausch*. Geschichte der Rinderpest in Schlesien in Herbst, 1811. *Memorabilien der Heilkunde*. Züllichau, 1813, vol. i. p. 45. See also *Pessina*. Anleitung zur Heilung der Rinderpest mit der eisenhaltigen Salzsäure. Vienna, 1812. *Hildenbrand*. Ueber den Anstekenden Typhus. Vienna, 1812.

² *Jessen*. Die Rinderpest mit besonderer Beziehung auf Russland dargestellt. Berlin, 1834, p. 77.

Gangrenous erysipelas (*erysipelas carbunculosum*) was epizootic in the porcine tribe in 1811, and also in 1821, in the agricultural district of Allost, in France ; it was so deadly that nine out of every ten animals perished. It reappeared in the same district in June and July, 1844, and killed all its victims with an extreme rapidity—sometimes in eight or ten hours.¹

Toggia describes an influenza or 'brain-typhus' prevailing epizootically among horses in Piedmont.²

A.D. 1812. Locusts destroying all vegetation in Asia.³ In Halle, the subterraneous larvæ of a kind of beetle destroyed all the seed-corn. A great flood of the Paraná in South America drowned immense numbers of cattle and other animals, domesticated and savage. When the waters subsided, their rotting carcasses polluted the air. Parish⁴ writes : 'When the inundation exceeds these, its ordinary limits, the consequences are very serious to the inhabitants of the adjacent lands. The effects of a remarkable flood which took place in 1812 will long be remembered. Vast quantities of cattle were carried away by it ; and when the waters began to subside, and the islands which they had covered became again visible, the atmosphere for a time was poisoned by the effluvia from the innumerable carcasses of skunks, capiguaras, jaguars, and other animals which had been drowned on them.'

In the early part of the year there were also serious inundations in Southern France, and afterwards intensely hot weather set in ; on which rot (*pourriture*) appeared among sheep in a most formidable manner. In the marshy country of Arles 100,000 perished ; and in Nismes, Montpellier, and other districts, an immense quantity—as many as 90,000 according to some reports—died. Horses, mules, hares, rabbits, and other animals were attacked at the same time by malignant anthrax, and mankind by an obstinate intermittent fever.⁵

¹ Nouveau Dictionn. de Méd. etc. Vétérinaires, vol. vi. p. 320.

² Wirth. Op. cit. p. 157.

³ Ritter. Op. cit. p. 794.

⁴ Parish. Buenos Ayres, p. 231.

⁵ Leschenault. Notice sur une Epizootie qui a regné sur tous les Bêtes à Laine. Paris, 1813. Hurltel d'Arboval. Op. cit.

Epizoötic ekzematous fever in Genevais,¹ and a severe outbreak of epizoötic pleuro-pneumonia in Switzerland.²

Malignant anthrax attacked all kinds of domestic animals and poultry in the neighbourhood of Augsburg. Wild creatures in the woods were not spared, and the contagion was transmitted to man in several instances.³ Ovine small-pox was very destructive in the province of Vicenza, Italy.⁴ Schnurrer speaks of the Cattle Plague as present in Prussia and Silesia.⁵

Wirth⁶ states that in 1812, 1813, and 1814, that form of influenza he designates as brain-typhus (*gehirntyphus*), attacked the horses belonging to the armies then operating on the Continent. In 1812 and 1813, it prevailed in Switzerland.

In 1812, while the French army was in Russia, the soldiers suffered much from dysentery; at the same time, this disease, accompanied by scorbutic symptoms—sponginess of the gums, soft sloughing ulcers on the skin and in the intestinal canal—reigned among the horses.⁷ It must be noted, however, that Kirchner⁸ asserts that glanders appeared in an epizoötic form among the horses of the French and German armies in Russia. This may be the disease of which Dillenius—who was a medical man, and probably knew little of comparative pathology—speaks.

At Ciudad Rodrigo, dry gangrene manifested itself with great severity among the British troops, and was supposed to be due, besides extraordinary privations and marching along heavy wet roads, to a disease among the cattle in the previous year. ‘ Besides the causes already mentioned as likely to have produced this dry gangrene, I ought not to omit that during the preceding very sultry and unhealthy summer, nearly all the bullocks for feeding the army had been driven up from the province of Tras Os Montes, Portugal—and on reaching the banks of the

¹ Recueil de Méd. Vétér., vol. xv. p. 653.

² Teuffel's Magazine, vol. i. p. 3.

³ Wirth. Op. cit. p. 85.

⁴ Bottani. Vol. viii. p. 333.

⁵ Op. cit. vol. ii. p. 508.

⁶ Op. cit. p. 157.

⁷ Dillenius. Beobachtungen über die Ruhr in dem Russischen Feldzuge, 1812. Ludwigsburg, 1819.

⁸ Kirchner. Magaz. für Thierheilkunde, 1865.

river Aguada in Spain, which crosses an extensive savannah (at the end of which stands Ciudad Rodrigo impending on a rock over the river), many of these cattle were found affected with a *murrain* and died in great numbers. The surviving cattle were driven on to the army, but, I believe, many of these were far from being sound when slaughtered—but necessity, under such circumstances, required that their flesh should be issued out to the troops; and perhaps this, too, contributed to throw the troops into the very sickly state in which they were found to be after the retreat from Burgos. That year I had many opportunities of inspecting the carcasses of the slaughtered cattle, and besides enlarged livers and *spleens*, and *aphthous tongues and enlarged absorbent glands*, I found in several of the most unhealthy great affections of the cellular tissue, which was either melted down into a gelatinous consistence, or approached suppuration. In our auxiliaries, the Spaniards, whose privations and fatigue were excessive, I saw some few cases which approached very near to plague, if they were not really that disease itself.¹ The cattle disease was evidently—from its origin and its symptoms—a dangerous form of anthrax fever.

A.D. 1813. Epidemic yellow fever at Gibraltar, and plague at Malta, Gozzo, Corfu, and other places.

A rabid wolf was seen at Bar-sur-Ornain, which did much damage.² Rabies canina appeared for the first time in the island of Mauritius, according to Unienville.³

In Switzerland, epizootic or contagious pleuro-pneumonia was very widely spread from 1812 to 1815.⁴

In Picardy an epizooty manifested itself among horses, which Rayer,⁵ who reports it, imagined had some points of resemblance to the miliary fever in man. It may be mentioned that Picardy was, and perhaps now is, notorious for the last-named disease. 'There showed itself in August, in a

¹ *A. Neale, M.D.* Researches to Establish the Truth of Animate Contagions. London, 1831, p. 91.

² *Champion.* Relation Hist. des Accidens causé par une Loup Enragée. Paris, 1813.

³ *Unienville.* Statist. de l'Ile Maurice.

⁴ Beiträge Schweiz. Thierärzte.

⁵ *Rayer.* Hist. de l'Epidemie de Suetie Miliare, etc. Paris, 1822.

great number of working horses in the district of Beauvais, a cutaneous disease which, although generally benignant, became sometimes mortal, by the conflicting and contra-indicated treatment resorted to by the farmers and pretending amateurs, these having erroneously confounded it with another malady named "enchauboulères," "ebullition" (*vulgo*—"heat of the blood," "surfeit" in England). This disease, named erysipelas, is characterized by a violent inflammation of the skin, accompanied by pruritis or itching, which causes the horse to rub himself against everything near. There are seen on the skin small miliary pimples—so small as scarcely to be perceptible. I have seen one of these animals in the course of a few days, in consequence of the friction to which he had subjected his skin, entirely denuded of hair. At the commencement of this disease, the animal is dull and nauseated; the pulse is full and accelerated, and betokens a strong reactionary fever. Bleeding, which is one of the efficacious measures to be adopted in order to moderate the early symptoms of this disease, ought only to be resorted to by a veterinary surgeon, as it is a deadly measure when improperly employed.'

The Cattle Plague was introduced to the provinces on the banks of the Rhine by the Russian troops.¹ Nebel, who gives us the earliest and most circumstantial account of the importation, states: 'In the autumn of 1813, when the Russian army was marching towards the Rhine, on its way to France, one of the Hungarian oxen, which we admired for their beauty, became affected with the plague (*pestem intulere*). The consequent mortality (*strages*) was not great, neither did it last long, so that most of the cattle had survived the disease, or they may have been bred from those which had been previously attacked and recovered.'²

The production of carbuncular anthrax from the supposed bites of flies has been more than once alluded to in this

¹ *Franque*. Op. cit. p. 103.

² *Fritschler*. Hist. Pestis Bovillæ. Giessæa, 1821, p. 12. This author gives a good list of the writers who had, up to that period, published treatises on the Cattle Plague.

history, and must furnish an interesting and important feature in the etiology of the malady. We have referred to an outbreak of this nature in Hungary, in 1790. We find that in the present year there was another in that country, in the palatinates of Arad, in Hungary, and in the Bannat of Temeswar. In Boulak not fewer than two hundred horned cattle perished from it, and in Versetz at least five hundred. Like the former irruption, it was supposed to have arisen from the attacks of the *Similium* of Latreille; and the insect is described as making its appearance towards the latter end of April or beginning of May, in such indescribable swarms as to resemble clouds, proceeding, as some think, from the region of Mehadia, but according to others, from Turkey. 'Its approach is the signal for universal alarm. The cattle fly from their pastures, and the herdsman hastens to shut up his cows in the house; or when at a distance from home, to kindle fires, the smoke of which is found to drive off this terrible assailant. Of this the cattle are sensible, and as soon as attacked, run towards the smoke, and are generally preserved by it.'¹ 'Such attacks are frequent in the hot dry seasons, when insects are most numerous. The symptoms are described to be a swelling of the throat, hanging down and tumefaction of the head, rattling in the windpipe, difficulty in respiration, palpitation of the heart, staggering, breathing very quick and short, tongue shining, swollen, and often aphthous; muco-purulent discharge from the eyes and nostrils, and profuse diarrhœa²—in fact all the symptoms of this particular form of anthrax.

¹ Kirby and Spence. Entomology, vol. I. p. 151.

² Townson. Travels in Hungary. Bruce informs us that in Nubia the wood and plains are full of poisonous insects. At Senaar, men and women anoint themselves once a day with camel's grease mixed with civet, to drive away these pests, and sleep in shirts dipped in grease with the same object, as well as to keep off malaria. Horses suffer extremely, and perish in great numbers; indeed no horses can be kept there. The cause of the mortality is owing to the existence of prodigious swarms of a poisonous fly called the Tsaltsalya, literally the 'dog-fly,' the *zimb*. The insect is about the size of a humming-bee, makes a loud buzzing noise, and inflicts a severe and poisonous wound. On its approach all the horses and cattle rush madly towards any water that may be near. Those it stings are covered with carbuncles, which appear at the seat of injury (Travels to the Sources of the Nile).

A.D. 1814. The harvest was unfavourable over the whole of Europe. A great scarcity of provisions happened in Naples. At Noya, in Italy, an epidemic resembling the plague broke out in mankind, and soon afterwards it showed itself at Cagliari. It was preceded by famine.

Sheep small-pox was epizootic at Belluno, in Italy.¹ Epizootic influenza prevailed among the horses in the Canton of Aargau, in Switzerland.² At Rouen, in France, what was termed an epizooty of gastric fever, but which was no doubt the multiform disease 'influenza,' broke out among the horses of the 4th Chasseurs à Cheval. According to Rodet, jun., the commencement of the attack was very sudden, and was announced by apathy, prostration, heaviness of the head, and feebleness in movement. Then the eyes became tearful, and were almost covered by the infiltrated eyelids; the pulse, until now full, strong, and rather quick, soon became very small, always rapid, but feeble, and not unfrequently intermittent; a dry hacking cough was present; the visible mucous membrane showed a well-marked yellow tint; the respiration was anxious; the fæces hard and covered with mucus. In some cases the pulmonary organs were more or less gravely affected, although always consecutively. Then the movements of the animals became irregular and staggering; a dark yellow liquid flowed from the nostrils, œdematous swellings formed under the abdomen and chest. In some instances, besides these symptoms, there were others, as follows: Cutaneous eruptions, ptyalism, spasmodic movements and other more remarkable nervous phenomena, and black spots or stains on the conjunctiva and pituitary membrane.

On examining the dead bodies, the essential lesions were found to consist in a more or less peculiar and distinct yellow colour of all the tissues, in inflammation of the mucous membrane of the stomach and intestines—this tissue presenting large patches of ecchymoses and gangrene, some of a violet and others of a black colour, while others again were green,

¹ *Bottani*. Op. cit. vol. vii. p. 340.

² *Beiträge Schweiz. Thierärztl.* p. 9.

³ *Recueil de Méd. Vétérinaire*, Vol. IX.

yellow, and lardaceous or gelatinous in consistence. The mesentery and omentum were also spotted with dark gangrenous patches; the lungs were inflamed to a greater extent, and at times were even gangrenous; the pleuræ were extremely inflamed, and contained a variable quantity of a reddish coloured fluid.

In Siberia, a very deadly epidemic broke out, and at the same time an epizooty showed itself among the reindeer. Wrangell,¹ who witnessed this event, alludes to it when speaking of the Tchuktches: 'Every tribe and every caravan is accompanied by one or more Shamans (priests), who are consulted on all important occasions, and their decisions are rarely controverted. The extent of their power was shown, amongst other instances, by a terrible one which occurred at Ostrownie fair in 1814. A sudden and violent disease had broken out amongst the assembled Tchuktches, and had carried off not only many men, but also a large number of reindeer, which form their chief wealth.' This celebrated explorer gives an excellent illustration of the change effected in the condition of a people by losing its domestic animals through disease, and also informs us that the reindeer is liable to exterminating maladies; and that disease among these hardy creatures is very general and deadly at times. 'The Jukahirs, who were once a numerous nomade race, have much diminished. Most of them have lost their reindeer by sickness, and now live poorly as fishermen along the banks of rivers. Some few have preserved their reindeer, and have withdrawn with them into the tundras near the sea.' Of the tribes on the Aniui river he remarks: 'Most of these tribes were formerly nomads, who ranged with their tame reindeer far and wide through the tundras in search of the best pasture. After the conquest of Siberia, they were subject to tribute, and were restricted to a limited circle, within which they were often unable to find sufficient food for their reindeer. The consequence of this restriction has been the gradual loss of those animals, partly from want of pasture, and partly from sickness, which, when it broke out in a single

¹ *Wrangell. Le Nord de la Siberie. Paris 1843, vol. i. p. 265.*

herd, spread rapidly among the rest, as they could no longer be withdrawn at once to escape the contagion. . . . The population on the banks of the Aniui has increased latterly, but this cannot be regarded as any sign of an improvement in the condition of the people. It is caused by the influx of the nomad tribes, who having lost their reindeer by sickness or other accidents, are forced to seek their subsistence, like the rest of their countrymen, in the neighbourhood of the rivers. . . . Formerly, all the Tchuktches lived on the produce of their reindeer ; but those among them who lost their herds by sickness or other causes, settled by degrees along the coast, where they kill whales, seals, and walruses.' This is a remarkable example of a people being compelled to change their mode of life through the loss of their domestic animals ; and we also find Mr. Kennan¹ mentioning a similar instance. He says that the settled Koraks of the Penzhinsk Gulf are the most brutal and degraded of the natives of North-Eastern Siberia. Having lost all their reindeer from disease, they built houses of drift-wood along the sea-coast, and gained a subsistence as fishermen.

The events of war in this year had greatly disseminated the Cattle Plague over the continent of Europe. The allied armies under Schwarzenberg had already, in the previous year, on their way to invade France, imported the pestilence into the Rhine provinces. Wherever they appeared bringing with them their droves of commissariat cattle, as certainly did the contagion extend to the herds in their vicinity, and from these to districts even distant from the infected centres. By this means it was carried into Switzerland,² into Austria,³ Silesia,⁴ into Upper Italy,⁵ and into France.⁶ In the latter country it raged around Paris, and still more extensively and

¹ *Kennan*. Tent Life in Siberia. London, 1870, p. 232.

² Beiträge Schweiz. Thierarzt, pp. 26, 42, *et seq.*

³ *J. Lidl*. De Epizootiis in Variis Austriæ nec non German. Sept. partibus. Viennæ, 1815.

⁴ *G. D. Namsler*. Über die Rinderpest und deren Behandlung. Breslau, 1816.

⁵ *Bottani*. Op. cit. vol. vii. pp. 270, 291, 339.

⁶ The French have, as usual, given numerous accounts of this terrible epizooty, some of them marked by great ability and erudition. The following are the principal treatises :

disastrously over the whole empire, until 1816, during which period the whole of Italy was infected and her herds ravaged.¹

The many treatises on this visitation of the bovine scourge would, in a special work on the Cattle Plague, well merit attention ; but as hitherto, in consequence of the comprehensive character of this history, it has been impossible to do more than briefly allude to the descriptions given by some of the most prominent writers, so now we will only refer in a summary manner to the observations of a few of the principal veterinary authorities who witnessed the disease in France, giving the titles of the books published at this time, below.

M. Grogner writes as follows :

‘ About the middle of April 1814, a serious epizoötic broke out in Ville Franche, in the department of the Rhone. Four cows died, evidently of the same disease. They seemed to be simultaneously attacked after they had eaten of the remains of the fodder which had been given to a herd of Austrian cattle that had traversed that road. M. Boin, a veterinary surgeon, recognized in this disease a bilious inflammatory fever in the highest degree contagious, and setting all medical treatment at defiance. Without characterizing the malady otherwise than by the general term of an epizoöty, M. Rativet, veterinary surgeon at Anse, had witnessed the condition of the cattle as they passed. M. Gayot, veterinary surgeon, informed me that, although situated on the high-road, his commune had been exempted from the disease ; for every proprietor on the road, alarmed by the reports that had reached him of the danger,

J. B. Gohier. Mém. sur la Maladie des Bêtes à Cornes dans le Départ. du Rhone. Lyons, 1814.

Leroy. De la Contagion regnante sur les Vaches, sur les Bœufs, et sur l'homme. Paris, 1814.

J. B. Huzard. Compte-Rendu sur l'Epizoötie. Paris, 1815.

Maublanc. Mém. sur la Maladie Epizoötique, etc. Coulommiers, 1815.

Hurtrel d'Arboval. Instructions Somm. sur l'Epizoötie Contagieuse, etc. Boulogne-sur-Mer, 1816.

M. Dupuy. Traité sur les Maladies Epizoötiques. Paris, 1836.

Girard and Dupuy. Notice sur l'Epizoötie qui regne sur le Gros Betail. Paris, 1816.

Guesent and Dupuy. Dictionn. des Sciences Méd. vol. xiii.

¹ *Metaxa.* Op. cit. vol. ii. p. 292.

had closed his stables. In one village, however, a farmer lost the whole of his cattle, from having permitted two of these animals to rest for a few days on his premises. A farmer at Amas lost twenty-two cows out of twenty-seven, in consequence of his having opened his cow-shed to these animals as they passed. The epizootic penetrated into Marancé in the following manner: A man named Pomerel bought at Anse some rags to fumigate his vines. They consisted of pieces of coverlets. They were drawn home by two cows attached to a cart. The rags were deposited under a waggon-house by which his cattle passed in their way to and from the pasturage. They appeared to scent the heap of rags, lowing and running backwards, as if they were afraid to pass. A few days afterwards, all his cows, including those which had drawn the cart, were seized with the epidemic, and died. M. Privat, a cattle-merchant at Onlius, received into his house some of the butchers of the Austrian army. While they were there they slaughtered an Hungarian ox, and left the skin in a corner of the stable. He had at that time five healthy cows, but they were all destroyed by the epizootic in six days. At the time when, in conformity with the orders of the administration, I inspected the markets of Ville Franche, four oxen that had been concealed from inspection were brought to the premises of M. Damiron. Two days afterwards, the only two cows that M. Damiron had previously possessed became ill, and, in process of time, died. M. Collet, veterinary surgeon at Savigny, informed me that some Hungarian cattle were turned into one of the fields of the mayor. All his cattle, which, on the departure of the others, occupied the same fields, were infected with the disease, and every one of them died.

‘M. Tonnerieux, veterinary surgeon at Givors, attended many cattle that were attacked by the disease; and he affirmed that, generally speaking, they became ill, one after the other, in the order of proximity to the door in which they stood in the stable. After being possessed of these facts and many others, I could not deny that the epizootic which prevailed was ‘*highly contagious*’ among cattle. Two facts proved that it was not entirely limited to cattle. A large dog, four

years old, drank some of the milk of a cow labouring under this disease. He was soon afterwards attacked by a foetid dysentery, which lasted eight days; he, however, ultimately recovered. A horse ate a small bundle of hay that had been refused by some of the Hungarian cattle, and which had been contaminated by their saliva. The horse soon exhibited symptoms of typhoid disease, and died. On opening him, very great gastro-intestinal inflammation presented itself. No fact, however, has proved the transmission of the poison to the human being. I have known several veterinary surgeons who were wounded in opening cattle labouring under this disease; but I have not seen or heard of any inconvenience resulting from it, beyond that of a simple wound. On the other hand, I have known or heard of numerous examples of the fatal consequence resulting from the inoculation of the human being by matter discharged in the *inflammatory* contagious diseases of cattle. This is not one of the least differences by which these diseases are distinguished from each other. It has been asked, whether it is prudent to eat the flesh of animals that are labouring under or have died of this disease? The troops of the enemy, before they reached our unhappy country, ate with impunity the flesh of such of their cattle as were affected with typhus. They did so with impunity in the districts that were most devastated by the diseases which they introduced. Even their sick used this food when they were laid up in the hospital. Our people did not scruple after this to have recourse to it, and they did so with impunity. It was cheap enough, for they purchased it at two sous per pound. I ate it myself many times, and without inconvenience. It was as good as the meat from the inferior joints of cattle. I generally had it stewed. The *bouillon* acquired somewhat of the taste of fat pork, and did not yield that rich odour which good meat thus treated acquires. That this food is not of a good quality, that it may injure weak and sickly individuals, and that it, consequently, ought to be excluded from the market, is perfectly true; but that it is essentially unwholesome, and, more especially, that it can introduce a tendency to typhus in those who eat it, I cannot believe.

‘Was it the Austrian, or, more properly, the Hungarian cattle that, in 1814, introduced this disease into France? or was this malady the inevitable consequence of the excessive fatigue, the multiplied excesses, the insufficient and unwholesome food, the inevitable crowding into small and ill-ventilated places, and other causes of disease inseparable from the movements of large armies? This is a question which, at present, I will not undertake to solve; but Buniva was so convinced of the origin of the malady, that he called it “the Hungarian epizoötic.” Huzard maintained that it had the same origin; but he accounted for it in a singular way. It does not, according to him, exist in Hungary; but the cattle of that country, from which the supply for the troops was almost entirely composed, contracted it in their route, in consequence of the numerous sources of insalubrity to which they were exposed, and, once being infected, they communicated the disease with frightful rapidity. My attention was, of course, much occupied in comparing the various modes of treatment adopted in order to restrain the ravages of this disease, for it was an evident fact that not more than one out of ten attacked by the disease survived. The result was the same whether I had recourse to bleeding or tonics, acids, mucilages, or cordials. Many recipes were much in vogue, and, with some difficulty, I obtained an account of the composition of several of them. At their head was one introduced by the Vicomte de Bussy, and which he had seen a thousand times used successfully in Germany, even when the animal was so reduced that all hope of recovery was abandoned. It was as follows:—“Take of yeast one ounce, and of ordinary beer a quart. Give half a pint of this three times in twenty-four hours, diminishing the dose as the animal gets better.” A half-pint of ale with a little yeast, or a cup of coffee, or a cup of water, would have done as much good. Another empiric added a quart of vinegar to ten quarts of barley-water. A quart of this harmless mixture was ordered to be given every two hours. This was certainly an improvement on the prescription of the Vicomte, but both of them would be perfectly useless. They were much of the same character

with the six grains of tartar emetic ordered for each beast in the epizootic of 1757 by Surgeon Chaignebrun—or the theriaca of Dr. Dufot—or the nitre and lily of the valley of Hartman. These medicines must be truly ridiculous and powerless when given in such minute doses. If a cure is ever effected apparently by these nostrums, it must in reality be accomplished by the efforts of nature. I should with more hope of success have recourse to *quinine*; but in what dose should it be administered? Twenty times as much as is given to the human being. Half a drachm or a drachm should be administered twice in the day, and its efficacy assisted by those useful adjuncts gentian and ginger. Some have recommended the chestnut, the willow, the tamarind, and the gentian; but with the exception of the last, they are comparatively worthless, and the gentian is a mere adjuvant to the quinine. After all, the remedy for a disease does not consist in the administration of any particular drug, but in the general mode of treatment. This must be directed by a person of real talent and skill, who can detect every change, and avail himself of every indication. There never will exist a sufficient number of veterinary surgeons thus to treat methodically and carefully one of these contagions, coming upon us like a vast and rapid inundation, and spreading itself suddenly over whole districts. When an expanse of country is infected—when every village and every stable is filled with patients, where shall be found sufficient power to grapple with the evil?

‘The veterinary surgeon hastens through the infected villages and hamlets. As he pursues his rapid course, he prescribes the medicine that is to be given and the course that is to be pursued, and on he hurries to other patients. The owner of the diseased cattle—does he faithfully obey the directions that have been given, or does he clumsily blunder through them? Or does he employ them not merely on the case in hand, but on many other ailments, real or suspected, of other animals? For when the epizootic rages, every little illness is supposed to be connected with it, or caused by it. Is the same specific applied to laminitis or to apoplexy; and, failing with regard to them, does the owner immediately apply to the “cunning man”?’

The public authorities interfere. Are they not endeavouring to repress a contagion, the control of which is beyond their power? Their task is a laborious one; it is expensive; it cripples the commerce of the country; it interferes with agriculture; it is injurious to a multitude of individual interests; it is difficult to establish, and that difficulty increases in proportion to the false notions that prevail of the nature and treatment of the epidemic. The very interference of the veterinary surgeon is often an evil. One animal in the process of treatment may infect a whole stable. While the attention of the veterinarian is engrossed by a certain number of patients, a whole community may be empoisoned, and the medical man himself may be the very vehicle of the infection. The pest may be more rapidly diffused than the antidote. Many may be cured, but a great many more will succumb before the remedy can arrive. "All other things being equal," says M. de Berg, "it is in the country which is best supplied with veterinary aid that the progress of the disease is most rapid. The reason is simple. The surgeon often enters an infected cow-house without his being at all aware of it. The contagious malady has not yet displayed its usual and fatal symptoms. He attends to the case before him, and then he goes to assist an animal suffering from difficult parturition, or labouring under some of the numerous diseases to which neat cattle are subject, and he, unaware of the mischief, carries with him the contagion, and spreads the evil far and wide. He carries the poison in everything that he has about him, and especially in the woollen clothes that he wears."

'The infected animals are likewise capable of communicating the disease before there is anything about them by which its presence is indicated. How often has the passage of one infected beast through a certain district spread the disease far and wide! The poison is conveyed by the hair with which they are covered, the effluvia from their evacuations, and the emanations from the pores of their skin. . . . I have seen many oxen die when surrounded by chlorine gas, and I have likewise had forced upon me the certainty that the cowhouse remained as fully infected as at first, although twenty dis-

infectant fumigations had been applied. . . . Have we any means of thoroughly purifying an infected stable? or are we sometimes compelled, as is done in Switzerland and Germany, to raze to the ground the buildings that have been contaminated by the poison? I am unwilling to advise the extreme measure, but I will mention one fact. There was a stable at Saint-Laurent de Chemaisset, which for many years, and notwithstanding innumerable fumigations, and although the walls had been whitewashed several times, and the mangers and the racks had been scraped, and the beams had been planed, and the pavement had been renewed, and every utensil was carefully scoured—was yet a source of infection, until the cattle were removed, and it was employed for another purpose.’ Speaking of preventive measures, he adds: ‘The practitioner need not be ashamed when he is thus employed; for next, or equal, to the rescuing from destruction those that are already attacked, is the preservation of the remainder of the dairy. He will have enough to do in the early recognition of the epizoötic disease; its origin, its progress, its fearful modes of propagation, its character, the probable time of its continuance, the method of distinguishing it from other diseases with which it may be confounded, the means of cure, the preventive measures which it may be necessary to adopt, and which absolute necessity can alone justify—here will be sufficient room for the display of talent and the exercise of sound discretion. Among these measures, the most efficacious and the most imperative will occasionally be the sacrifice, I will not say of the diseased only, nor of those that are suspected, but of others that, to the inexperienced eye, continue to exhibit symptoms of health. Who can better determine the cases in which the disease will be almost necessarily fatal from those in which there is yet hope, than the veterinary surgeon? Who will be able earliest to recognize the changing character of the disease, and to seize the opportunities when decisive measures must be adopted, or nature left to itself? Who, if I may be permitted to draw such a comparison, when an immense conflagration has broken out, and the play of the pump has become powerless, and the

flames are increasing every moment, will not regard with admiration those who are actively employed in cutting off all communication with the neighbouring buildings, and removing all combustible matter, and sacrificing everything that would tend to increase the violence of the flames? Such is the duty of the veterinary surgeon. It is an arduous but an honourable one.'

Hurtrel d'Arboval informs us that the disease broke out in many villages in the department of the Pas-de-Calais, at Baurains, Douchy, Marconnelle, and other places; and that it was brought thither by cattle which had been imported to supply the commissariat of the British army, a portion of which was then returning to Britain. About the second week in December, 1815, thirty horned beasts belonging to M. Moulins, a butcher and army contractor, were lodged in an inn at Marconnelle; these animals came from Chateau-Cambresis. Many of them appeared to be ill. The hay which they had left was given to the landlord's cows, and these became sick and soon all died. At the same time, another lot of cattle belonging to this butcher were located at Aubin. They ate little. About fifteen days afterwards, eleven more arrived at this place, and these fed no better than the former lot. On the evening of their arrival, Mr. Carpentier, of Marconnelle, brought a very fine cow which he had just purchased. It refused all kinds of food. It was ordered by the man who sold it to be kept separate. In a few days after this the disease broke out at Aubin. Numerous other similar examples are given to show that the contagion was imported into these places, and how it spread. The symptoms he enumerates do not differ in any essential features from those described by preceding writers. The second stage lasts two days, when the animal often dies; usually, however, diarrhœa commences on the third day. When the disease is about to terminate fatally, the dejections have an odour more and more foetid, and are very putrid and abundant; the eyes are sunk and fixed; the head is turned towards the sides; progression becomes impossible; the pulse is obliterated; the animal gives utterance to plaintive signs, and scarcely moves,

until all at once it falls in a heap, its voice is lost, and death soon takes place. The phenomena are observed from the fifth to the seventh day of the disease. It is also during this period that pregnant cows abort. Many calves which are dropped at their full time have exhibited all the symptoms of this fearful disease, and have died. When the termination is to be favourable, the disease is less rapid in its progress ; the animal does not entirely refuse its food ; the matters evacuated are not very abundant, fluid, or discoloured ; sometimes an aphthous eruption in the mouth is noticeable. If the disease does not become serious between the third and the fifth day there is hope ; and if it gets over the seventh day, it is very rare that death takes place. The animal which survives the ninth day may be considered as saved. The changes observed in the alimentary canal were of an inflammatory character ; the mucous membrane of the small intestines was in a state of gangrene. They contained much foul gas, and matters resembling muddy water, or white or slightly yellow-coloured fluid. The liver was softened and pale, and the gall-bladder full of yellow liquid bile. The heart was shrunken, softened, and flaccid, and the little blood it contained was black and fluid.

The most characteristic signs of the epizoöty were slight nervous twitchings, adynamia, dysentery, phlogosis of the mucous membranes, and inflammation of the small intestine. The phenomena of the malady were varied. In some localities internal anthrax (*charbon interne*) was most conspicuous. The dysentery manifesting itself only on the fifth day, instead of the third, was a certain indication of death. At other places, Villiers, for example, the inflammatory character of the malady was so marked that antiphlogistic treatment was indicated at the commencement of the attack. The most remarkable feature, however, was the presence of a continued fever, sometimes accompanied by brief remissions, ataxia and adynamia.

D'Arboval was of opinion that medical treatment of the disease was to be commended, as many animals would recover with judicious management ; but if they were abandoned to

nature, or badly treated, there would be nearly as many deaths as there would be sick. Bleeding, drastic purgatives, stimulating or heating remedies, were all dangerous. Setons and fumigations he relied chiefly on, with the administration of emollient drinks, and quinine, gentian, and other tonics. In the second stage of the malady he recommended friction to the spine and the members with volatile liniment, and rice or flour gruel drinks acidulated with vinegar or sulphuric acid. After the fifth day, if the disease became aggravated, he thought it was time to abandon all treatment, as the animal might be considered lost. When recovery was taking place the strength was to be maintained by beef-tea and bread steeped in water, and bitters in beer was to be given frequently. The animal was only to be allowed its ordinary food by slow degrees. But adopting wise preventive measures and the exercise of great care, of the nine hundred and twenty-eight communes which formed the department of the Pas-de-Calais, fourteen only were allowed to suffer from the epizootic. In these stricken communes it was reckoned there were four thousand eight hundred and twenty-three head of cattle, and of this number four hundred and eighty-two only were attacked, of which three hundred and twenty-eight died, and a hundred and fifty-two were cured. The value of the animals before they died was reckoned at 43,664 francs, a large sum if the small proportion of communes attacked is considered. Every praise is given to the effective measures which saved the whole of the farmers from inevitable ruin. At Lyons and in its environs the disease ravaged the country long and widely, because the presence of a foreign army prevented these measures being enforced.

‘ Professor Gohier, who witnessed the epizootic in the department of the Rhone, was much confused in tracing its origin. He regarded it as an acute catarrhal inflammation of nearly all the mucous membranes of the body, but especially of that lining the alimentary canal. There was diarrhoea and dysentery, and he thought it was a grave mistake to look on the malady as at all related to anthrax. There could be no doubt as to its highly contagious character, but fortunately it did not

attack horses, asses, *sheep*, or dogs. The professor successfully attempted to communicate it by cohabitation, and also by introducing the matter from the nostrils of the diseased beasts into the nasal cavities of healthy ones. *He quite believed that goats would contract the malady, and says that many have taken it through staying but a short time in the same sheds with diseased cows.*

When the animals were dead putrefaction set in rapidly, and an examination of their bodies exhibited always the same pathological changes. The organs in the thorax were not so much affected; in the abdomen the mucous membrane of the intestines was inflamed, of a brownish hue, with collections of dissolved blood in their interior; the same was observed in the uterus and the bladder. The gall-bladder was filled with a thick black bile. The fourth stomach was inflamed and gangrenous in many places. The food enclosed in the third stomach was black and dried, and the epithelial membrane was detached and remained adherent to the food. The symptoms enumerated by Gohier do not vary much from those already given. There were rigors and a slight tumefaction of the eyelids; the membrane lining the nose became red, and the discharge was abundant. The vessels of the conjunctiva were congested, and the caruncula lachrymalis and membrana nictitans were gorged with blood. The horns were hot, as well as the superficies of the body; the excrements were dry, and showed streaks of blood. This state lasted for two days, rarely for three. Then these symptoms became augmented. Profuse diarrhœa set in, with prostration of vital power, grinding of the teeth, and sometimes tetanic rigidity of the muscles; the respiration was jerking and interrupted as in 'broken wind' in the horse.

The third stage was announced by coldness of the horns and the skin; dryness and excoriation of the skin of nose; a foamy saliva running from the mouth, and a most fœtid diarrhœa often enough mixed with blood; the pulse imperceptible; tremblings; great difficulty in respiring, and frequently repeated sighs or moans. Many animals, when they lay down, turned their heads round on their shoulders, and kept their necks curved in this way for a long time—a sign of

approaching death. The question was asked if the epizootic has been caused by the Hungarian cattle, and if it had been developed in these animals by the particular influences of climate, nourishment, fatigue, etc. The author was at that time unable to decide this difficult problem. Of its very contagious nature there could be no doubt, and there was no occasion for wondering that in so brief a time it should have made such great progress, as the nearly continual march of troops prevented the having recourse to those great measures of safety used in such cases.

Scarcely was it possible to save one animal out of twelve or fifteen. The cows which calved were preserved ; and those animals which were cured had eruptions, which always denoted a favourable termination. The non-success of medical treatment he attributed to the peculiar nature of the inflammation, which had a great tendency to pass into gangrene. All kinds of treatment were tried, but without avail ; bleeding and purgatives were hurtful ; setons scarcely caused any swelling, much less suppuration. Out of twenty-seven animals, of which twenty-two were oxen, three cows, and two *goats* treated by the professor, he was only able to save two cows. He came to the conclusion that régime and medicaments were illusory, but he believed in the utility of preservative measures. ‘Has there not at different times been numbers of remedies proposed for the cure of glanders, rabies, and sheep small-pox, and is there one of them effectual ? The same may be said for those held up as specifics for the cure of this disease, which is a kind of plague. Is there any remedy which is really preservative against the plague in mankind ? The best physicians say there is not. When we are told that a certain number of animals have been cured or preserved by some kind of treatment, we must not take this expression to the letter, because it can never be proved that all these have been, or would have been, attacked by the epizootic.’ A synoptical table is given of the various ways by which the contagion of epizootic diseases may be communicated.

It appeared to Gohier that, in the public interest, all the affected cattle, when they had reached the second stage of the

disease, should be destroyed, because experience had demonstrated that their recovery then was always impossible. At least for one that was cured twenty perished, and these before their death communicated the malady to numbers of others. By timcously killing them the contagious centres were diminished.

The veterinarian Huzard, in a report laid before the Society of the Faculty of Medicine of Paris, on the 28th of April, 1814, informs us that a deadly epizoöty had been raging for some time among the cows and oxen. The disease, which appeared to have been brought from Hungary by the Allied armies, was regarded as a bilious putrid fever, very contagious, and which often carried off those attacked by it in thirty-six hours. The cows were never seized until after they had been in communication with the Hungarian oxen, or the cattle captured by the Cossacks, and which had herded with the sick animals. That which was most singular was, that the disease did not exist in Hungary, according to the information given by those Austrian officers well versed in rural economy. It seemed that it was the fatigues of the journey, the bad food, and the vicissitudes of the weather, which excited the appearance of the malady.

The constant phenomena attending its appearance were loss of appetite, suspension of rumination, and suppression of the secretion of milk from five to six hours before the commencement of the more palpable symptoms. The disease lasted at the most five days. Towards the end there was a very foetid putrid dysentery. When the animals died, the intestines were found inflamed, the gall-bladder extremely distended, and filled with bile more or less thick. No kind of treatment was successful, and only some beasts here and there were saved. It was necessary to isolate, as completely as possible, the diseased from the healthy beasts. As soon as a proprietor saw his cows ill, he hastened them to the butchers, who converted them into beef. This was not unhealthy, for the troops which were fed on it experienced no ill effects; notwithstanding this, however, it had less flavour than healthy flesh.

In general, in diseases, it was considered preferable to sell the animals in this way than to treat them, because the price of the drugs and the doses which it was necessary to give to produce any effect, surpassed the abilities of the proprietors, and often exceeded the value of the animals. And after all, experience had demonstrated that drugs are always useless against contagious epizootics. Against these, says M. Huzard, there is only needed men and money. Men to prevent communication between the healthy and diseased animals, and to execute the necessary sanitary measures, and money to defray the expenses of these and the cost of isolation. Some useful tables are given of the estimated losses in the arrondissements of Paris, Saint-Denis and Sceaux. The whole department of the Seine was calculated to contain, in the beginning of 1814, eight thousand cows; and of this number, at the maximum, two thousand had died or been sold in consequence of the epizooty. The number had only been reduced by one-fourth, and it was reckoned that about one-eighth had actually perished from the disease, which was more disastrous in the country than in the city, where the loss only amounted to about one-tenth. It was conclusively shown that all those which had been isolated were preserved, and that the malady only manifested itself where it had been carried. There is much complaint made, and with reason, of the carelessness of the cattle-owners and of the little importance they attached to the employment of police measures, in which they had no confidence; while they pinned their faith on the nonsense of charlatans, on all the pretending *curers* of the malady, and in old-fashioned preservative and curative recipes. The local authorities only too often ignored the laws relative to epizootics, and were far from strict in enforcing their execution. A great number, in fact the majority of them, did nothing—a circumstance which may be attributed to the events of war. Yet, this able veterinarian asserts, against an epizooty of this kind the administrative police is the only power which can be brought efficaciously into play. Lastly, it was to the negligence or the misconduct of proprietors that might assuredly be attributed the ravages of epizooties, and not

to the disease itself, which it is easy to arrest or prevent. In a *résumé* of his observations, it is advanced that this disease had always been imported into France by contagion alone. This contagion had always been due to expatriated animals in which fatigue, overheating, and bad nourishment had developed the malady spontaneously.

The distinctive characteristic of the epizoöty was the inflammation of the abdominal viscera, principally of the stomachs, the intestines, and the liver—whence resulted a dysenteric, bilious, or putrid flux. It was generally mortal, as were all the intense inflammations of the herbivorous ruminants, which terminated promptly by asthenia. The flesh of the diseased animals was largely consumed by the Allied armies, and by the inhabitants of Paris and its environs, without any accident. The only measure which was most generally neglected, was the isolation of the diseased and the healthy. This isolation was all the more indispensable as the epizoöty was very contagious. The contagion was only communicable to animals of the same species. It had no effect on man, nor on animals of a different species. The destruction of the diseased or contaminated beasts could only be practised effectually where there was unity of action and of administration; and above all in the commencement of the disease, when it had only shown itself at a few points, or among a small number of animals which were easy to circumscribe. There was some complaint made of the insufficiency of the resources which veterinary medicine afforded in this disease; but was human medicine any more successful in the curative treatment of the plague, yellow fever, or of typhus? And was it not something to be already able to indicate, in a certain manner, preservative and preventive measures?

Guersent, assisted by the veterinary professor Dupuy, in an able essay on epizoöties, devotes a considerable portion to the discussion of this particular disease. This work is well worthy of the attention of the veterinary student, and I only regret that I am not able here to give even a very brief analysis of some of the more particular passages. This author is the first in France, I think, who designates the epizoöty as

‘contagious typhus,’ and he says he has borrowed the name from the Germans, in preference to that of ‘cattle plague,’ ‘malignant fever,’ ‘pestilential fever,’ ‘the variolous pest,’ and even the ‘cattle small-pox.’ He regarded it as contagious, and as comporting itself like the human plague or typhus of the East, and the typhus of the armies in Europe. The contagious emanations from diseased cattle could easily be transmitted by the air. He asserts positively that the epizooty was not transferable either to goats, sheep, horses, cats, dogs, etc. The incubation of the contagious miasma is some days before the development of the malady. Dupuy’s observations are very valuable, as they are exact in the details of all the symptoms of the malady during life, and in the changes found after death. This talented veterinarian, however, made a grave mistake in maintaining that the disease was variola—indeed, in many epizooties of a different kind he saw nothing but this affection, and this blunder led him to erroneous conclusions. The experiments with regard to the production of the disease by cohabitation and inoculation are interesting, and most conclusive. The incidental consecutive eruption was observed by him in a fair proportion of cases, and especially as occurring on the mammæ. Altogether his treatise is most instructive, and recent observers have added but little to the descriptions he affords.

CHAPTER II.

PERIOD FROM A.D. 1815 TO A.D. 1830.

A.D. 1815. An awful volcanic eruption took place in the island of Sumbawa, near Java. Out of 12,000 people only twenty-six escaped. At the same time, violent whirlwinds carried up men, horses, cattle, and whatever else came within their scope.¹ A very severe epidemy prevailed at Corfu.

A serious epizooty among horses is casually mentioned by Youatt as occurring in this year. 'So lately as the year 1815, an epidemic of a malignant character reigned among horses. Three out of five which were attacked died. It re-appeared in 1823, but was not so fatal. It was said that the horses that died were ultimately farcied; the truth was, that swellings and ulcerations, with foetid discharges, appeared in various parts, or almost all over them.'² Hydrophobia appeared in an epizootic form in dogs at Copenhagen and throughout Norway.³ In Austria this malady was also remarkably frequent.⁴

It is generally believed that in this year the specific foot disease of sheep (*contagious ovine paronychia*), known by the designation of 'pedero' in Spain, 'pietin,' 'limace,' 'fourchet,' 'pesogne,' 'pourriture du pied,' 'crapaud contagieuse,' 'cuidite pustuleuse,' etc., in France, was introduced into Germany by Spanish Merino sheep imported from the latter country.⁵ In

¹ *Lyell*. Op. cit.

² *Youatt*. The Veterinarian, vol. vi. p. 122.

³ *Viborg*. Conspect. Præcip. comm. de Enzoötica Canina atque Hydrophobia, 1817.

⁴ *Waldinger*. Oesterr. Jahrbuch, 1816. Also Abhandlung über die Krankheiten der Hunde. Vienna and Trieste, 1818.

⁵ Würtemberger Verordn. p. 156. *Heusinger*. Op. cit. p. 291.

Germany it has been named the 'böartige Spanische Klauen-seuche,' 'Französische Klauenseuche,' 'Klauenkrankheit,' 'chronische Klauenkrankheit der Schafe,' 'Krümme,' 'Krümpe,' 'Klauenkrebs,' etc. Since the year 1791, when Chabert¹ exactly described it by the name of 'crapaud'—though he overlooked its epizootic and contagious character—it had been known in the Pyrénées, on the banks of the Gironde, in Vivrais, and in Bas-Medoc. At various periods, but only subsequent to the introduction of Merino sheep into that country, it has prevailed very extensively as an epizooty. It is only since 1805 that it has appeared in Piedmont and Switzerland.²

In the province of Belluno, Italy, contagious pleuropneumonia appeared in an epizootic form.³ In the States of the Church, anthrax prevailed among cattle;⁴ and at Rome a similar epizooty manifested itself among pigeons. Metaxa⁵ thus alludes to this extraordinary outbreak: 'About this time there broke out at Rome a mortality among pigeons, more particularly young ones. It began with the formation of small encysted tumours, of a steatomatous or atheromatous appearance, and which soon degenerated into veritable carbuncles (*che dalla condizione di steatomi, ed ateromi degeneravano in veri carboni*). The occurrence of the malady was attributed to the collecting and keeping a great number of these creatures in small, narrow, ill-ventilated dwellings, and feeding them on damaged mouldy Indian corn (*dal grano d'India alterato e mucido*). It was suppressed by changing their food and habitations, and much immediate benefit was derived from the use of water in which lime had been dissolved.'

At Maubege, France, dysentery was panzootic; people, cattle, horses, dogs and cats being affected.⁶

¹ Chabert. Instructions Vétérinaires. Paris, 1791, p. 213.

² Pictet. Bibliothèque Britannique, art. 'Agriculture,' vol. x. p. 371. See also Tessier. Instructions sur les Bêtes à Laine, pp. 223, 230. Huzard. Nouv. Dict. d'Histoire Naturel, second edition, vol. xix. p. 523.

³ Bottani. Op. cit. vol. vii. pp. 345, 348.

⁴ Metaxa. Op. cit. vol. ii. p. 297.

⁵ Ibid. loc. cit.

⁶ Mehmman. Hufeland's Journal, Oct. 1821.

A.D. 1816. The weather in Central Europe was most unfavourable, being cold and damp. The crops suffered to an excessive degree, and scarcity and famine followed. Probably in consequence of the low temperature, maladies of a particular type were rare. Schnurrer¹ writes for Germany: 'Owing to the strange weather, there was observed in the northern districts a great quantity of fish. At Kronburg there was such an extraordinary number of horn-fish, that the fishermen could almost shovel them into their boats; the lobsters and herrings also appeared to be in great plenty.'

In Ireland 'cutaneous diseases and vermin committed great ravages at that time.'²

Owing to the cold weather in the Highlands of Scotland, there was a most serious mortality among sheep and lambs, but more particularly the latter. The districts bordering on the Atlantic suffered the most severely; and an observer states that in a walk through the Braes of Glenorchy, he counted upwards of a hundred lambs by the way, that all appeared as if newly dead, and nearly as many more that had quietly lain down to perish without further exertion. And in fishing for about two hours on another day along the river Lyon, in the finest pasture glen in the Highlands, he saw no fewer than sixty-three carcasses of old sheep by the side of the stream, all apparently dead of hunger.³

Rot in sheep (*cachexia aquosa*) caused great losses in France. 'Humidity has an injurious influence on all kinds of animals that have a weak and lymphatic temperament. Sheep are in the unfavourable situation of most quickly receiving this impression. What took place in 1816 affords a lamentable example. The rain continued to pour during the whole of the summer; and, as a consequence, almost every flock, even those that were best cared for, became a prey to dropsy, which prevailed epizootically from the commencement of autumn.'⁴ The disease continued until the next year, and the Minister of

¹ *Schnurrer*. Op. cit. vol. ii. p. 531.

² *Kidd*. On Typhus Fever. Edinburgh Med. and Surg. Journal.

³ The Edinburgh Farmers' Magazine, May, 1817.

⁴ *Hurtrel d'Arboval*. Op. cit. art. 'Pourriture.'

the Interior deputed veterinary surgeons Huzard and Tessier to draw up a report on it.

It also prevailed in Germany.

In the kingdom of Nassau, according to Franque, splenic apoplexy (anthrax) was epizootic.

In India, the seasons appear to have been no more propitious than they were in Europe, and blights and disease in grain were common. So heavy and continuous were the rains, that the great rivers overflowed their banks and destroyed much property. During the whole of this and the following year, damp thick fogs prevailed, and sickness was general.

In Ceylon, during this period, an epizooty resembling that of 1806 was reported. An observer states: 'Black cattle are sometimes subject to an extensive and devastating murrain; there was one in 1806 and 1807, and another in 1815 and 1816. The latter was more severely felt towards the northern than the southern extremity of the island. The origin of the disease is involved in great obscurity; whether it be contagious or not, my information does not enable me to decide. The symptoms were: a drooping and unhealthy appearance of the animal, hanging down of the head, swelling about the eyes, mouth, and throat, quick respiration, rattling of the throat, unsteadiness in walking, great discharge of fluid from the eyes, ulcers about the mouth and nose, and impaired appetite; towards the advanced period of the disease, purging supervened. I inspected one body after death, and did not discover any remarkable structural derangement. At the same time, when the murrain was destroying great numbers of black cattle, a dreadfully fatal disease prevailed among the wild elephants, hogs, deer, and elks. In some places of the Barticaloe district, where wild hogs abound, the bodies of several hundreds of these animals were occasionally found collected within a very limited space.'¹

Ceylon has often attracted attention on account of the great epizooties which have from time to time swept away both feral and domesticated animals. Perhaps it was the frequent occurrence of deadly disorders in man and beast that caused

¹ *Marshall. Op. cit.*

medicine to be made a branch of royal education among the early kings of Ceylon, and induced such anxious solicitude for its careful study everywhere among the Singhalese. One of the edicts of Asoca, engraved on the second table at Girnar, relates to the establishment of a system of medical administration throughout his dominions, 'as well as in the parts occupied by the faithful race as far as Tampaparni (Ceylon), both medical aid for men, and medical aid for animals, together with medicaments of all sorts suitable for animals and men.'¹ Bujas Rajah, King of Ceylon (A.D. 339), was the author of a work on surgery; he built hospitals for the sick and asylums for the maimed, and the benefit of his science and skill was not confined to his subjects alone, but was equally extended to the relief of the lower animals—elephants, horses, and other suffering creatures.² In the second century before the Christian era, the capital city (Anarajapoor), among other conveniences, contained hospitals in which animals, as well as men, were tenderly cared for. The 'corn of a thousand fields' was appropriated by one king for their use; another set aside rice to feed the squirrels which frequented his garden; and a third displayed his skill as a surgeon, in treating the diseases of horses, elephants, and snakes.³

With regard to the causes of these widespread and fatal diseases among animals in Ceylon, we are left somewhat in doubt; but it is pretty certain that climate and the geological and topographical features of the country had much to do with their occurrence. The north of Ceylon is low and level, and constituted mainly of swampy or irrigated land; there are no mountains, and owing to the winds of both monsoons passing across the island without leaving behind them an adequate supply of moisture, droughts are periodical visitations, and are frequently of long continuance. Vegetation in the low-lying and scarcely undulating plains is mainly dependent on dews, and whatever damp is distributed by the steady sea-breeze; and in places the sandy soil rests upon beds of madrepore and coral rock, which permit the moisture to

¹ *Journal Asiatic Soc. of Bengal*, vol. vii. p. 159.

² *Tennent*. Ceylon, vol. i. pp. 504, 505.

³ *Ibid.* Op. cit. 493.

escape before the earth has been thoroughly saturated. In the plains, the larger rivers are sluggish and have but few tributaries—these even being exhausted in the dry season. At the change of each monsoon, however, torrents of rain descend, which cause them to overflow their banks, and widely inundate the level country. On the subsidence of these waters, the intense heat of the sun, acting on the surface left exposed, produced a noxious and fatal malaria. So deadly is the pestilence in some seasons, that the Malabar coolies, as well as the native peasantry, betake themselves to precipitate flight.¹

It can scarcely be a matter for surprise, then, that the animals subjected to these unfavourable influences should experience their evil effects; indeed, it has more than once been observed that the outbreak of pestilential malarious fevers in mankind has been coincident with epizooties of anthrax and kindred plagues in the lower creatures. From their constant exposure at all seasons, the cattle in Ceylon, both those employed in agriculture and on the roads, are subject, according to Mr. Tennent, to the most devastating murrains, which sweep them away by thousands. So frequent is the recurrence of these calamities, and so extended their ravages, that they exercise a serious influence over the commercial interests of the colony, by reducing the facilities of agriculture, and augmenting the cost of carriage during the most critical periods of the coffee season. What the nature of the bovine malady may be has not yet, to my knowledge, been determined by any competent authority. One would be inclined to pronounce it an anthracoid disease, or the Cattle

¹ A curious remark has been made with regard to one of these rivers—the Mahawelliganga, a few miles from Kandy. During the deadly season, after the subsidence of the rains, the jungle fever generally attacks one face of the hills through which it winds, leaving the opposite side entirely exempted, as if the poisonous vapour, being carried by the current of air, affected only those aspects against which it directly impinged (*Tennent*, op. cit.). A similar fact has been noted by Mr. Bates, with regard to the tributaries of the Amazons in South America: 'In certain places on the banks of these, intermittent fevers prevail, as they do on all those affluents of the Amazons which have clear, dark waters and slow currents. The incidence of this endemic is somewhat remarkable, for it exists on one side of the Andirámirim, where the land is high and rocky, and not on the other, which is low and swampy.'—'The Naturalist on the Amazons,' vol. i. p. 284.

Plague ; but the same distinguished writer informs us that a similar disorder, which he thinks is probably 'peripneumonia,' frequently carries off the cattle in Assam and other hill countries on the continent of India ; 'and,' he adds, 'there, as in Ceylon, the inflammatory symptoms in the lungs and throat, and the internal derangement and external eruptive appearances, seem to indicate that the disease is a feverish influenza, attributable to neglect and exposure in a moist and variable climate, and that its prevention might be hoped for, and the cattle preserved, by the simple expedient of more humane and considerate treatment, especially by affording them cover at night.'

It also appears that cows from England do not thrive in Ceylon, but soon droop and become sickly. Horses are more liable to disease than in England, particularly to inflammation of the bowels ; and their power of sustaining fatigue is much less than in cold countries—indeed, they are not deemed capable of enduring above one half the labour that horses usually perform in high latitudes. Neither do dogs, particularly greyhounds, bear removal from England to Ceylon, as they soon sicken and die ; many expire during the first year after they arrive, and few outlive the second. The lungs and liver are reported to be the organs which chiefly suffer in the dog. The progeny of imported dogs are likewise extremely liable to disease, and difficult to rear ; but dogs of the native breed are hardy and very prolific. Poultry, including turkeys, geese, ducks, and common fowls, are occasionally liable to disease, which carries off great numbers of them. The disease is sometimes confined to turkeys and common fowls ; at other times geese and ducks are also affected. Nothing is known respecting the nature of this malady ; the animals which are seized generally die suddenly. 'Dissection has hitherto thrown no light upon the proximate cause of the disease ; we are equally ignorant of the remote cause, and how far certain states of the air occasion the mortality. The disease prevails in hot dry weather, as well as during the existence of a moist cool atmosphere.'¹ The same writer, when alluding to the

¹ *Tennent.* Op. cit. vol. ii. p. 152.

peculiar malady designated 'beriberi,' which attacks the human species, says that horses and dogs are sometimes liable to a paralytic affection of the extremities, and that he never knew of any recovering.¹ And it would appear that that country is no more favourable to camels than it is to the other domestic animals, as attempts to domesticate them have hitherto failed, owing to their dying of ulcers in the feet, 'attributed to the too great moisture of the roads at certain seasons.'

Mr. Baker,² in describing his farming operations at Newera Ellia—a district in Ceylon—tells us how, at the commencement, 'an epidemic appeared among the cattle, and twenty-six fine bullocks died within a few days; five Australian horses died during the first year. . . Even the natives are decimated at certain seasons by the most virulent fevers and dysentery. These diseases generally prevail to the greatest extent during the dry season . . . months pass away without a drop of rain or a cloud upon the sky. Every pool and tank is dried up; the rivers forsake their banks, and a trifling stream trickles over the sandy bed. Thus all the rotten wood, dead leaves, and putrid vegetation brought down by the torrent during the wet season are left upon the dried bed to infect the air with miasma. . . . In a jungle-covered country like Ceylon, diseases of the most malignant character are harboured in these dense and undisturbed tracts, which year after year reap a pestilential harvest from the thinly-scattered population. Cholera, dysentery, fever, and small-pox all appear in their turn, and annually sweep away whole villages.' And another author, when stating that Ceylon produces but few domestic animals, adds that the horse and sheep are not natives of the island, and can scarcely be made to thrive there when imported. 'As the expense of importation must be added to the price of sheep and horses, and as a great proportion, particularly of the former, die on being landed in the island, these animals are in consequence much dearer here than in any other part of India. Sheep sometimes fetch ten and even twenty times the price they do on the opposite coast of Coromandel.'³

¹ *Tennent*, p. 184.

² *Eight Years' Wanderings in Ceylon*.

³ *Percival*. *The Island of Ceylon*. London, 1802, p. 283.

A.D. 1817. Diseases among men and animals were more than usually prevalent during a long and damp winter, partly in consequence of the weather, but more so, perhaps, because of the scarcity and bad quality of the food. Marasmus and dropsy, as well as what is designated 'rot,' affected animals in many countries, as in the preceding year.

In Scotland 'sheep-rot' was wide-spread and fatal. 'The year 1817 was again very wet, rather more so than the preceding one, and the average temperature of the season was several degrees higher than the other, which produced a very abundant growth of grass in the months of September and October; the ultimate consequence of which was, that one of the greatest fatalities of rot followed to which the memory of man bears evidence.'¹

'In Ireland, during the early part of the year, there was, in many places, a great mortality among horses; but it was to be attributed rather to starvation than to disease.'²

In the department of the Moselle, France, a very destructive epizoöty, caused by bad forage, broke out. Those animals which recovered suffered much from debility and emaciation, and seeing the great scarcity of good provender, the veterinary surgeon of the department, M. Collaine, had recourse to an expedient which was attended with great success, as it was the means of saving many herds and flocks. He recommended that all the old, worn-out, or useless animals should be killed, and their flesh cut up into thin slices, salted or smoked, to preserve it, and afterwards to be made into soup, which was to be mixed with herbs or roots of various kinds, and thickened with flour or meal. This was to be given to the debilitated ruminants in small but often repeated quantities.³ A similar malady to the above caused much anxiety in Piedmont.⁴

An epizoöty among pigs appeared in Germany. It was

¹ *Fairbairn*. Treatise on the Cheviot and Black-faced Sheep.

² *Harty*. Sketch of Contagious Fever.

³ *Collaine*. Du Marasme Epizoötique, etc., et de l'emploi des Matières Animal pour réstaurer les Herbivores. Metz, 1817.

⁴ *Luciano*. Osservazioni relative alle Infermità de' Bovini, etc. Turin, 1819.

described as epizootic gastritis (*magenseuche*).¹ In the month of November an epizooty of malignant bronchitis raged among horses at Versailles.² At Wurtemberg, in the month of May, a curious outbreak of rheumatic paralysis of the tail (*sterzseuche*) occurred among cattle. 'There has recently shown itself among cattle a somewhat general, but not dangerous disease, which has been named the 'tail-worm ;' from which disease three, four, or five joints of the tail appear paralyzed. If you hold up the other portion of the tail horizontally, the paralyzed end falls by its own weight into a perpendicular position. The skin is at the same time swollen, and feels like soft tanned leather. This disease of the tail is cured by applying a counter-irritant to the diseased portion ; for instance, by making an incision through the skin, and introducing some irritant as pepper, or burning the place with a red-hot iron, or dressing it with muriate of antimony, and covering it afterwards with a resinous plaster.'³

Epizootic ekzema reigned during this year in Austria, from the spring-time until the autumn ; in low damp localities the feet were much affected, and in many places it was complicated with contagious pleuro-pneumonia. Anthrax was very prevalent on the mountains at the same time.⁴ At a later period it (ekzema) appeared in Bavaria, and in the next year it seems to have been pretty general in many provinces of Germany.⁵ In 1819 it was in France. D'Arboval says : ' In 1819, in the department of the Oise, this disease presented some remarkable peculiarities. Besides the symptoms which are common to it and other affections of the same nature, there was manifested at the same time as these a violent inflammation of nearly all the parts of the head ; the tongue became extremely swollen, and was protruded sometimes three or four inches from the mouth ; the glands placed under the tongue were enlarged, and swelled until they were not unfrequently the

¹ *Busch*. Zeitschr. für Thierheilkunde, vol. ii.

² *Journal Pratique de Méd. Vétérinaire*, vol. iii.

³ *Württemberg. Verordn.* p. 112.

⁴ *Korber*. Handbuch der Seuchen, etc., der Hausthiere. Leipzig, 1835, p. 195.

⁵ *Franque*. Op. cit. p. 165. *Brosche*. Die Maul-und-Klauenseuche der Hausthiere. Dresden, 1820.

size of an apple ; the submaxillary space itself became tumefied and often finished by having an abscess ; the disease, however, was but slight in many beasts. Pouchet and Potelle, who have observed it, do not speak of lesions of the feet, and it appears that this symptom has not been present. Finally, this malady qualified as epizootic, and which has affected horses and other monodactyles in the departments of the Eure, Pas-de-Calais, the Somme, the Oise, the Seine-et-Marne, the Seine, and the Seine-et-Oise, with the blackened membrane of the tongue, the purple-red patches at its tip and on its sides, the phlyctenia, and the ulcerations on its inferior surface was, perhaps, only aphtha ; it was certainly an index of irritation of the gastro-intestinal mucous membrane.¹ This epizooty, as will be seen, travelled from east to west.

This year is notable from the great outbreak of cholera at Jessore, which destroyed so many human lives. It was preceded by excessively bad seasons, which did much injury to the grain crops. To comparative pathologists this epidemic will be interesting, as during its prevalence the lower animals were much affected by disease. With regard to the weather, Annesley says: 'There can be no doubt that very unusually disturbed seasons prevailed at Madras and its dependencies for several years previous to the appearance of cholera. I shall merely observe, in general terms, and in a few words, that the years 1815-16 were extremely hot. Strong southerly and westerly winds prevailed, and very little rain fell. The year 1817 was extremely hot, with variable winds, chiefly from the south and west, and a very great fall of rain, with thunder and lightning. The year 1818 was similar to the preceding one. There were excessively heavy falls of rain, continuing from July to January, a great deal of thunder and lightning, and a severe hurricane in October.'² In Bengal Jameson reports: 'The changes which have taken place in the course and succession of the seasons within the last few years, in every part of Bengal and its dependencies, have been so striking, as to have not only attracted the notice of attentive observers, but

¹ *Hurtrel d'Arboval*. Op. cit. vol. i. p. 116.

² *Annesley*. *Researches on the Diseases of India*, p. 499.

to have become a frequent topic of conversation.' Mr. Tytler, who was a witness to the outbreak of the epidemic at Jessore, thinks it was occasioned by bad rice, which was damaged during the wet weather. 'After the wet season, that is during the autumn months, the rice, which they call in India Ause, Ballum, Patcherry, Mungy, Satte, and Rarha, and in English, coarse rice, cargo and yellow Patha, was swollen, and of a black, red or yellow colour, and exhaled a putrid odour. Besides the grain itself, the husk was dense, thick, oleaginous, and poisonous, which condition the Indians term Kura and Kun. Very many animals were severely ill from the use of this grain.'¹

At the commencement of cholera, domesticated fowls became ill and died. Mr. Tytler observed them have vertigo, retchings, falling on their sides, and finally dying in convulsions. It is to be remembered, however, that these creatures had been feeding on diseased or ergoted rice. Other animals suffered. Searle says: 'I shall now mention, as coming under my own immediate observation, and not undeserving notice, as I cannot help connecting it with the cause of my attack, a remarkable coincidence of what may be supposed atmospheric deterioration in some way, at this time, that, for a week before, there had been a singular epidemic disease among the poultry in my compound, and in the neighbourhood, not of the chicken-pox character, to which poultry are subject, but poultry in a state of apparently the most perfect health were suddenly seized, drooped, and died in an hour or two.

'One of the dead ducks, the day before, was brought for my examination, when I found the whole of the inner coat of the intestines, from the gizzard downwards, in a high state of inflammation, and filled with mucus. I observed to the servants at the time that it had died of cholera, and warned them to take care of themselves. Connecting this with the fact, not unfrequently noticed, that during the epidemic visitations of cholera, a like mortality has prevailed among cattle—atmospheric deterioration as a cause may be fairly

¹ *Tytler. Remarks upon Morbus Oryzeus, or Disease occasioned by the Employment of Noxious Rice. Calcutta, 1820.*

inferred. Mr. Chalmers remarks, at folio 142 of the Madras Report: "It is a curious fact, that in the towns near the hills, where the epidemic was so fatal, a disease occurred among the cattle, which kept pace with, and often exceeded in mortality, that of the human species." Dr. Ranken, too, observes in No. 74 of the "Medical and Physical Journal": "At Rajputana, during the epidemic prevalence of the disease, the brute creation did not altogether escape the sickness of the period; many camels, and goats in particular, having died of violent diarrhœas and other ailments." The collector, also, of this district (Madura) authorizes me to assert, that in numerous instances, and from various parts of the collectorate, the like was not only reported to him, but urged by many of the ryots or farmers, as a plea for the remission of their kists or revenue dues. And the same I also heard was the case in the Coimbatore district.¹ Jameson says: 'It was observed in many places, that an unusual mortality occurred amongst black cattle, sheep, and other domestic animals. Thus, in the Backergunge district, cattle had the disorder, and were cured by opium and other remedies found most serviceable in the human species. Cows when seized shed their young. So in Tipperah, great numbers of horned cattle and sheep were seized with vomiting and convulsions, and suddenly expired. In Delhi dogs died rapidly, and more horses than usual were carried off by the dry gripes. (In this city, a curious thing was that large swarms of flies, which had infested the place before the breaking out of the epidemic, wholly disappeared during its prevalence, and returned as it withdrew. This might be owing to the cold, sharp, westerly wind then blowing.) In the Rajputana force, and throughout the whole of the Jeypore and Nagpore territories, the season was remarkably fatal to camels; and in the centre division domestic animals of all descriptions died in great numbers: but, in the latter instance, the mortality might be ascribed to want of proper care and food. At Sumbhulpore, an elephant had every symptom of cholera, and was cured by brandy and laudanum. But the affection of brutes was by no means general. In many

¹ *Searle. Cholera*, p. 43.

districts the lower order of animals are expressly stated to have enjoyed their usual health.¹

Mr. Orton² says that 'it has been observed in Bengal, that colic was uncommonly prevalent among horses during the epidemic.' The disease in the horse termed "gripes" (which is very common in India) seems to bear a perfect analogy to cholera. It is equally sudden in its attack, rapid and dangerous in its course, short in its duration, and when recovery takes place, it is equally quick as in this epidemic. The disease is attended with watery purging, etc.' And Mr. Barraud, a surgeon in the cavalry, avers that his regiment lost more horses than men during the cholera. At Macassar, cholera was reported to have been seen in cattle and dogs, and at Amboyna, a monkey was observed to be so affected.³

In France, in the month of May, twenty-three persons were bitten by a rabid wolf, and out of this number no fewer than fourteen died, despite all remedial efforts.⁴

Schlatter⁵ witnessed an outbreak of bilious fever among horses in Schaffhausen and its neighbourhood, and also in the Grand Duchy of Baden, during the late summer of this year. He supposed it to be due to the animals eating too freely of the rich clover grown in these places. Tscheulin also describes this epizooty.

A.D. 1818. Pestilence in mankind, in the form of Asiatic cholera in every part of India, in Ceylon, and in the Mauritius; and yellow fever in the United States, the South American continent, and the West Indian islands. In August, the cholera reached Bombay, having taken about a year to cross the great Indian delta 'transported from place to place, as in cases of ordinary infection.'⁶

The summer was very hot, and, as a consequence, anthracoid affections were somewhat common among animals in many

¹ Jameson. On Cholera. Calcutta, 1820.

² Orton. The Epidemic Cholera of India. London, 1831. See also an interesting paper on this subject by Veterinary Surgeon Hodgson, in the Veterinarian for 1853.

³ Hamburg Magazin, vol. xv. p. 427. J. Marshall. Op. cit.

⁴ Trollet. Traité de la Rage.

⁵ Schlatter. Der Thierarzt, etc. Schaffhausen, 1834.

⁶ Government Report on Epidemic Cholera in India.

countries. In the Marches of Brandenburg, for instance, there was a great epizooty of anthrax, and many people suffered through contagion. 'In the summer of 1818, there occurred in the districts of Brandenburg a wildly spreading disease, which began at Spandau and extended as far as the Elbe. This was the "Milzbrand" in all its forms, and it appeared in the most diverse kinds of animals. It commenced about the middle of June and lasted until autumn. Cattle suffered most, horses next—and chiefly those at grass. The flocks of sheep were seldom attacked, and among swine, so far as I know, the disease was not very damaging. Very serious, however, was the loss among stags, and particularly the larger game, of which a great quantity was kept in the royal forest of Falkenhatten; the number was reduced, according to the forester, from eight hundred to less than two hundred by the disease. Of the herds of cattle in many places, one-half died; in other places, two-thirds; but this only occurred when the animals were at grass—the stall-fed beasts usually escaped. As for the causes of this disease, it is to be observed that the summer was remarkable for intense heat and drought, while in the spring the meadows and pastures had been considerably flooded.

'Cattle were compelled to seek their food in what were, at other times, marshy pastures, because no herbage grew elsewhere in consequence of the drought. Besides this, there was a scarcity of water, through the wells and ditches having become dried up, or reduced to a small quantity of blackish water. However, in regard to this circumstance it must be mentioned, that in those places where they were well supplied with water, the mortality was no less. There is another point, too, which must not be omitted, and to which many herd-owners laid great blame; it was that, after the beautiful warm weather in May had pushed the vegetation very forward, on the 1st of June a night frost came and nipped it; there was a complete failure in the rye, which was then in bloom, and this was noticed more particularly in the low-lying fields. It was supposed that the cattle in eating this frost-bitten grass, laid the foundation for the disease; and it was sought to

prove this from the circumstance that those cattle kept in stables, and fed on hay made from the upland pastures, or green forage from other localities, remained unharmed, as it is well-known that the high-lying fields seldom suffer from night-frosts. Yet this conclusion was not altogether correct, as the disease developed itself in various localities and at various times. The animals kept in buildings—cows as well as horses—only became affected here and there, when, as was always the case, they were not given meadow-hay to eat; the few exceptions—which were principally among horses, lead me to the conclusion that they had been bitten by gadflies (*bremsen*) which had shortly before been feeding on diseased cattle. The varieties of the disease were numerous.¹

In the province of Belluno, Italy, a disease of the same nature—gangrenous sore-throat (*angina gangrenosa*)—appeared. Bottani says: ‘In the month of July, on the mountain of Gal in the commune of Limana, district of Belluno, malignant sore throat, or bovine esquinancia, manifested itself among the cattle depastured there, and continued until September. The attack was limited to the cattle on this mountain. This inflammation of the throat and fauces was remarkable for the great facility with which it passed into a state of gangrene, the animal perishing soon after it had shown symptoms of the infection, no matter how quickly and diligently its cure was attempted. The angina maligna was manifested by a vehement fever, and an intense heat in the mouth and about the fauces, great tumefaction of all the textures of the oral aperture, and sometimes this swelling was manifest externally; the cow lost its milk, and this was frequently one of the symptoms announcing the commencement of the malady; much dulness was observed, a total loss of appetite and suspension of rumination, a harshness of the skin, and a dull melancholy look of the eyes. The breath was foul, the pulse quick and sinking; the beast seemed anxious; there was grinding of the teeth; a purulent discharge from the nostrils; great prostration of strength; diarrhœa, and oftentimes prolapsus of the rectum, which was looked upon as a sure sign

¹ *Thaer. Casper's Wochenschrift*, 1836, p. 250.

of approaching death. On a post-mortem examination of the dead animals, there was remarked inflammation of the palate and the apex of the tongue, gangrene of the fauces and tonsils, and also of the larynx and pharynx, inflammation to a greater or less extent in the trachea, the bronchial tubes, and the lungs; in all there was inflammation of the intestines and degeneration of the spleen, and also inflammation of the bladder; the flesh appeared inflamed, and at times seemed to have acquired a dark livid colour. As a rule, if much care was not taken in making these post-mortem investigations, and in avoiding the use of the flesh as food, much danger was incurred in the liability to anthrax or carbuncle. As an example of this, it was certified that Joseph Leson of the commune of Limana, who was entrusted with the opening of some dead beasts, incautiously ate some of the flesh of the same, and there quickly came an anthrax or carbuncle on his right arm, which resisted all remedies and compromised his life. . . . Thirty cows died from the subtle infection, the greater part of which were not attempted to be cured; two hundred slightly infected were preserved by remedial means and close attention, and nearly three hundred suspected beasts were mercifully saved from its ravages by extreme precautions. By these measures was the malady arrested in its birthplace, that is to say, on the mountain of Gal in the commune of Limana, and before it had time to extend itself. The too luxuriant and stimulating nature of the herbage which grew on the fertile mountain, the dryness of the sultry summer, all of which was stimulating and irritating to them, together with the water they drank from a very cold spring half-way up the mountain, to which they were always running; as well as the position of the mountain itself, which was so enclosed by others that at mid-day there was not a breath of air stirring—all these were deemed to be the principal causes of this contagious epizoöty (*epizootia contagiosa*).¹ In some communes of the same province, cattle brought from the Tyrol suffered very much from pneumonia.²

In England, the summer and autumn were very hot and

¹ *Bottani.* Op. cit. vol. viii. p. 350.

² *Ibid.* loc. cit.

dry, and mushrooms and other fungi had been remarkably plentiful.

Veterinary Surgeon Wilkinson, of Newcastle-on-Tyne, in a work which is not at present accessible to me, speaks of 'influenza' in horses being epizootic this year.¹ Canine rabies was also remarked as very prevalent.²

During this and the following year, 'distemper' in dogs was unusually common in Lyons and its neighbourhood; and it is asserted by those who had the opportunity of observing it, that the rarefaction and heat of the atmosphere rendered it unusually malignant.³

A.D. 1819. Great storms and cosmical perturbations were observed over nearly the whole world, and epidemic diseases committed great havoc among the populations of many countries. Blood-rain and red-mould, which coloured animal and vegetable substances, caused great alarm in Padua, where it revived the ancient superstitious belief with regard to signacula.⁴

That everlasting scourge of Asia—myriads of locusts—began to generate around the Caspian Sea, and to spread themselves in immense shoals towards the west, devastating the Trans-Caucasian and Russian provinces in their way. In the next year they had reached the Crimea,⁵ and in the following years their ravages increased as they still came westward, until, in 1823, they had passed the Danube, and, devouring all vegetation before them, entered Poland and Prussia in 1827.⁶ Scurvy was prevalent in mankind at the same time.

Influenza was very prevalent and fatal among horses in England in the early part of the year. Mr. Field⁷ of London makes the following entry for February:

'In the beginning of this, and latter part of last month, a highly inflammatory and very prevalent disease occurred. The weather very changeable, but the disease not likely to be

¹ *Wilkinson*. On Catarrhal Affections in Horses. Newcastle, 1818.

² *Forster*. Op. cit. p. 178.

³ *Hurtrel d'Arboval*. Op. cit.

⁴ *Sette*. Mem. sul Arrosimento Straordinario di Alcune Sostanze Alimentose. Venice, 1829.

⁵ *Lee*. Medical and Physical Journal, vol. lv. p. 465.

⁶ *Ritter*. Erdkunde von Asien.

⁷ *J. Field*. Posthumous Extracts from Veterinary Records, p. 25.

induced by it. The following were the symptoms: Quick, full pulse; moist tongue, but feverish smell and red appearance; eye much inflamed in some cases, in others extremely dull and heavy, and eyelids closed, indicating severe pain in the head. These symptoms were not preceded by symptoms of the first stage of fever, nor were they accompanied by quickness in breathing. In some cases, tremendous swellings in different parts of the body, especially of the legs. It was epizootic, but not contagious; as it seemed to attack alternately most of the horses in any one stable when it first made its appearance—instance Major S.'s five horses, Colonel P.'s three. These horses were attacked in a rather milder form—at least, most of them; were vigorously treated in the first instance by bleeding and purging, and were all immediately relieved, except the two latter of Colonel P.'s. C. G., of Oxford Street, suffered very much, having no less than seven or eight horses ill at once; but they were horses extremely fat, plethoric, and lax, so that an effusion of blood took place in the cellular membrane of the legs, etc., and severe inflammation of the lungs. . . . On examination of two, which died in one night, the following appearances were observed: Dreadful inflammation of the right side of the heart, which was almost black; lungs excessively red, but light; pericardium containing from two to three pints of red serum; stomach, at its most depending part, had a large black spot, as if about to slough, appearing as the stomach of a patient dying from the taking of oxalic acid: in both these cases the same appearances. Mucous membrane of intestines pale, but containing thin fæces, interspersed with flakes like sloughing membrane. . . . Other horses are now suffering from this disease, the symptoms of which are: very quick pulse; tongue black; mouth containing frothy saliva; eyes very red; breathing not much quickened, unless just previous to dissolution; no restlessness; blood withdrawn with great difficulty, and when coagulated extremely firm, and showing a thick buffy coat. Eleven horses' (in his practice) 'died of this disease: the termination in one was abscess of the lungs. Three or four had inflamed stomach, with spots of extravasation. Thirty horses

had attacks; but the latter cases were milder, probably on account of the immediate and vigorous treatment had recourse to when such symptoms were manifest.'

This successful treatment of epizootics when they begin to decline, is an old fallacy which will be noticed hereafter.

According to Veterinary Surgeon Moorcroft,¹ in this year there was a general and fatal epizooty among the Cashmere domestic goats, by which the 'pashm shal,' or fleece for manufacturing shawls, was immensely increased in price.

In Canada, the Duke of Richmond, then Governor-General, lost his life from the bite of a tame fox, which had suddenly become affected with rabies. The extraordinary epizooty among these animals in Germany had considerably increased, and it was also becoming more extended in Switzerland. Wirth, in the latter country, writes: 'In the year 1819, there appeared a remarkable disease among foxes, which spread itself over the greater part of Germany and Switzerland, and continued in an intermittent manner until the end of the third decennium of this century. It commenced in the year 1819 (?). In the Cantons of Thurgau, St. Gallen, and Zurich, it was frequent, and appears to have been communicated from the foxes to dogs and cats, and now and again to the larger domestic animals.'²

Kochlin has also some comments on this strange outbreak: 'On the 20th of August, we hear that two women had been attacked and bitten by a mad cat in the village of Höngy. Some time previously a fox had bitten this cat, and from that time it had been no longer healthy. In the same week, a fox sprang upon the udder and tail of a cow when at pasture, and a strong man with difficulty drove it away. Individual foxes were found dead in the neighbouring wood, and others which approached dwellings and men were killed. When they were followed they were not loth to show a disposition to defend themselves, and had even attacked dogs, cats, and other domestic animals. Under date of the 15th September, the Sanitary College had received intelligence that a dog, bitten

¹ *Moorcroft and Trebeck. Travels in Cashmere and Thibet, vol. ii. p. 167.*

² *Wirth. Archiv. Schweiz. thierärzte, vol. vi.*

by a fox in the village of Riesbach, had been affected with rabies and killed. Another dog, also bitten by a fox, was still healthy. On dissection of the dead foxes, there was found inflammation and swelling of the liver; an accumulation of bile, and the intestines filled with food. According to a report of the 27th October, a fox came to the village of Wipkingen; it was followed, and as it appeared to be vicious, it was also killed. On the 30th of October, a cow, which in the previous month of August had been attacked and bitten in the nose by a fox while in the meadow at the village of Nurenstorf, sickened. The symptoms were: quivering, convulsions, and trembling of the whole body; a discharge of mucus from the mouth; loud bellowing, and sudden paralysis. In Nieder-Rüti, a fox stole into a barn, where it was shot. It had a very diseased appearance. On the 20th of November, the official, Kyburg, reports that a man in the village of Ottikon had killed a fox which had attacked boys, and that he and his household had eaten the flesh and sold the skin. At Unter-Illnau, a woman found a dead fox; at about the same time came in reports of attacks on men by mad cats, and injuries by their teeth and claws. According to a report of the 28th September, a fox at Weiningen attacked a girl who was fetching water from a well, and tore her clothes in several places. The girl remained unhurt, and the fox was killed. Another fox attacked the dog of a coachman between Wallisellen and Rieden, and bit him in three places. In this and the following years similarly affected animals showed themselves in the neighbourhood of the Canton of Aargau.¹

In the district of the higher Danube, in Bavaria, this strange epizoöty was also witnessed, according to Fröhlich, who writes: 'I must first remark that in this year, after a sudden great heat in the summer, whereby several people were struck down in the harvest-field and some of them died, a rather severe autumn set in, with damp and cold; and following on the malignant fever of the summer, there was now an inflammatory nervous malignant epizoötic fever among the horned cattle of this neighbourhood—a kind of spleen (*mils*), or rather blood

¹ *Köchlin.* Op. cit. p. 7.

disease. At the same time broke out the disease among foxes and cats, especially wild cats (*Feldkatszen*). On the 16th of October, 1819, a man brought his son, a lad of about four and three-quarter years, to me. He had been bitten on the upper right eyelid, about ten o'clock in the morning, by a diseased fox which had entered the house, and which the father had afterwards killed. The district doctor dressed the wound with *lapis infernalis*, as if the child had been bitten by a rabid animal, and applied an ointment of cantharides. The boy remains until the present time well, and free from all symptoms of hydrophobia.' Some other accounts are given of people who were bitten in a similar manner, and of cows which were wounded, became rabid, and died, and then we have the following: 'I must add that I, as well as many other trustworthy authorities, have seen, followed, and also sometimes overtaken and killed, during the summer and autumn, half-dead and dying foxes in the neighbourhood of cattle pastures; and not only in those districts where the disease in question has been communicated to cattle, but also in other districts in which not a single case of hydrophobia occurred, although it could not but have happened that these foxes mixed freely with the cattle by night. This must undoubtedly have been the case upon the Alps, in the neighbourhood of Sonthofen, where, in the later parts of the summer and autumn, several diseased foxes were seen; they appeared to be so mad that they ran round the people who met them, and they were killed and buried. Not a single case of rabies occurred at this time, or for a whole year afterwards, among the cattle on the Alps.'¹

Another account is as follows: 'Sad news comes from the neighbourhood of Spessart, and especially from Rothenburg; foxes, cats, and other animals affected with rabies have been met there. The imperial physician and the professor of the Veterinary School were immediately sent there. Travellers who yesterday arrived from Aschenaffenburg relate that many people there hesitated to eat venison. The reason of this outbreak is not yet known, and one waits for information.

¹ *Henke. Zeitschr. für die Staatsarzneik.* vol. x. p. 18.

Many dogs, cats, and other animals have already been killed, and one woman has died from the bite of a cat. Soon afterwards, on the 10th of November, the Government authorities of Hanau, being informed that in the neighbourhood of Steinal rabies raged among foxes, caused a general hunt throughout the district, with instructions to bury all the dead foxes the huntsmen found or killed, three feet deep in the ground, and in their skins. The Grand-Ducal Government published an edict under date the 23rd November, as follows: "Information has been received that in Bierstein, at Kirchbracht, a mad fox has been killed; that foxes in Ekharterod have bitten two men, and in Saalmünster one ox; that the foxes in Josgrund show no dread of mankind, but allow themselves to be killed by the same; that in the same place several dogs and cats have been mad, and even a constantly chained dog; and as it has been truly reported that on the past Saturday, at Leichenrod, a fox which appeared diseased and did not avoid people, though it did not attack them, has been killed," etc.

'Later, the newspapers relate that even in New York and Russia quite similar and simultaneous outbreaks had occurred—namely, that in the district of Sikrash and Rabinowitz many men had been bitten by mad wolves, and whole families had died; while in Wittepsk the people had the imprudence to eat the flesh of bitten cows. An old acquaintance writes to me from Steinau: "In this district the first traces of this disease showed itself in the forest of Marjop, which borders on Bavaria, and where, especially in Spessart, it has been particularly prevalent. At Michaelmas there was seen a fox, apparently quite healthy, at a mill in the vicinity of Marjop, in broad daylight. It entered the house as if it belonged to it; defended itself there and in the courtyard like a baited badger, though attacked by two large dogs, who did not like this stranger as a lodger. It was subsequently killed by them in the neighbouring meadow, after it had taken to flight. At brief intervals several foxes were destroyed in the same place: one by day, which had attacked a chained dog and fought him bravely; and two at night, one of which had crept into

the house through a hole in the door, which had been made for the entry and exit of the poultry. One of the most rabid of these creatures, in the middle of October, rushed upon a herd of cattle, and fastened itself so fiercely upon a two-year-old cow, that this beast tossed it high in the air. Until the present time it has been eagerly argued that this disease among foxes is the true rabies. A dog which broke away from its chain at Marjop, and which probably had been bitten by one of the foxes killed in the locality three weeks previously, bit two persons before it could be killed ; but this event does not seem to be so important, because the wounded people are up to this moment in good health. More convincing, however, was the undoubted appearance of rabies in the ox which was injured on the 13th of October, and which became affected on the 23rd of November. Since then, in the forest here, and in the neighbouring district of Altengronau, several foxes have been killed : one on the highway, close to the town ; another at Schlüchtern, which had the audacity to enter the crowd at the annual fair, and was found among the peasants. Most of them are mangey ; at least, the one I saw at Schlüchtern was so in a high degree. It is very strange that the disease should have spread by degrees towards the Vogelsberg, while the same malady had been previously noticed in Franconia and in Spessart. Hence it appears that it has extended itself by the contagion of the bites. From Aura one writes that in many places in Spessart and the neighbouring forests, as well as in this neighbourhood, a disease has shown itself among the foxes ; the foxes have also bitten a cow and two oxen in the pastures at Heiligenbrück, and these have really been seized with rabies and shot. The chief medical inspector, sent by the authorities, had visited Frammersbach and Rottenbuch, and convinced himself that rabies had broken out among the foxes. At Mernes three dogs were bitten, which also became affected, and these died or were shot. Several foxes were found dead in the fields. A friend writes to me under date of the 1st January, 1820, and says : " There were many mangey foxes in our vicinity (Rosbach) from 1814 to 1817 ; they were most numerous

where, in following the course of armies in a time of famine, they were able to feed on the dead bodies left exposed after battles and other events. In the last two years I have scarcely found two cases, out of about one hundred and fifty, in which there were not some traces of an eruption towards or about the tail. The disease, which in the last year has been frequently noticed in Spessart and Hanau, has not attacked a single fox in my immediate neighbourhood. In the village of Hassdorf, about twelve miles hence, one was killed which had entered and wounded several dogs; but the injuries had no serious results.¹

A.D. 1820. Indian cholera raging in Eastern Asia.

‘Rot’ in sheep was somewhat destructive in France and Germany.²

From 1820 to 1822, the Cattle Plague was very prevalent in Siberia.³

In England, according to Blaine,⁴ rabies was very frequent among dogs, and for the succeeding three or four years continued to be alarmingly common; after which it moderated for a few seasons.

In Switzerland, the ‘rabies vulpina’ was yet in existence, according to the evidence adduced by Kochlin.⁵ ‘In March, 1820, a man met a fox in the road near Embrach, against which he had to defend himself with a stick. In Dättikon, a fox bit a cat and was killed; the same happened to another fox in Rachenbulach; and a third was found dead near Kloten. Later, a fourth in Fraenstein, a fifth in Embrach, and a sixth in Hausen, near Ober-Embrach. In the first, they found the liver black and gangrenous; in the last, the intestines were healthy, but the stomach, instead of containing food, was full of pebbles (*Kieselsteine*), pine-cones, and hair. Generally speaking, many foxes showed themselves in that neighbourhood, and three, which would not be driven away by stones,

¹ *Wildungen*. Weidmann's Feierabende, vol. vi. p. 95.

² *Wirth*. Op. cit. p. 124.

³ *Haupt*. Ueber enige Seuchen krankheiten der Hausthiere in Sibirien. Berlin, 1845. *Sick*. Kritische Beleuchtung und Würdigung der Europäischeen Pestkrankheiten fremden Ursprungs, etc., 1822.

⁴ *Blaine*. Op. cit. p. 99.

⁵ *Köchlin*. Op. cit. p. 11.

were killed. At the same time, rabies broke out in this and other localities, among cats, and many people were injured by them. Under date of the 19th of April, we hear from Basserstorf, that a fox had been worried by a dog; that another had come into the stable belonging to the miller of that place, and gnawed the harness, and that the miller killed him. After this, a fox was shot in Ober-Embrach, and on examining it, they discovered the liver to be corrupt, and an effusion of bile in the small intestines, as well as a number of pebbles in the large intestines. In Madlikon, a dead fox was found. In October, another fox attacked a dog on the Winterthur road; and in November, a dog was bitten by one of these creatures on the common of Wallishof. This fox was killed.'

In the Canton of St. Gallen, Hensler¹ reports that this mysterious epizooty was observed in 1820; that it was less frequent in 1821 and 1822; that in 1823 it re-appeared in a more extensive manner; and that in 1824 and 1825, fewer dogs but more foxes and cats became rabid, and cattle were infected. It terminated in 1827. In the years 1819, 1820, 1823, 1824, and 1825, it was in the Grand-Duchy of Baden, and its ravages were more particularly manifested in the Black Forest.²

A.D. 1821. Yellow fever was epidemic in Andalusia and other parts of Southern Spain; and Sir William Fellows asserts that the air, from its stagnant condition, became so vitiated that its noxious qualities even affected animals.

During the heat of the summer, an extensive and fatal epizooty manifested itself among swine in many departments of France, but particularly in the north; it was designated 'pleuro-pneumonia,' but in all probability it was what is now recognised as 'Swine Plague.' Wirth alludes to it as the erysipelas (*rothlauf*) of swine, and it may be observed that it has hitherto been considered as one of the two forms that anthrax fever assumes in the pig. Saussol describes it as it appeared in the neighbourhood of Mazamet (Tarn). It spared neither age nor sex, fat nor lean. The average number of deaths was estimated to be, in this locality, one-fifth of every four

¹ *Hensler*. *Morgenblatt*, 1829, p. 1076. ² *Badische Annalen*, vol. iii. p. 30.

hundred animals attacked. The symptoms were: loss of appetite, intense thirst, dulness, groaning, and a preference for cold damp places. The second stage was marked by tympanitis of the abdomen, heat of the skin, constipation, scanty excretion of urine, laboured breathing, heaving at the flanks, and a short cough. The eyes were suffused with tears, and the conjunctival membrane was highly inflamed. These symptoms developed themselves in the course of twelve hours; if there was no abatement of the malady, the third stage commenced, in which the animals staggered about, and when they lay down their limbs were outstretched in a spasmodic manner; there was gurgling in the throat and symptoms of rapid sinking; towards the last, they leant against the wall or any object near, and if they then fell it was only to die a few minutes afterwards. Death occurred usually about the third day, preceded sometimes by convulsions of the face and extremities. The causes were supposed to be the great heat of the sun; a scarcity of water; feeding on dry plants; returning home in the evening exhausted, and receiving a large quantity of food; then being shut up in ill-ventilated sties, without drink until morning. After death the chest was found filled with bloody, limpid fluid; the lungs were inflamed, and the bronchial tubes filled with sanguineous mucus; the pleura was also inflamed and covered with lymph—the diaphragm covered with petechiæ. The intestinal mucous membrane was also much inflamed, and the brain was covered with a reddish lymph-like serosity.¹ In Bavaria, swine appear to have perished in large numbers from a similar malady.² At Chalamont, in the department of Ain, glossanthrax was observed and reported upon by Veterinary Surgeon Lami, who believed it to have been caused by stinking fogs, and the use of mouldy forage.³

In the country of Cleve, towards the end of the year, an

¹ *Saussol*. Recueil de Méd. Vétér. vol. xiv. p. 233. See also *Didry*. De la Maladie qui a régné Epizootiquement sur les Porcs. Paris, 1822. *Türk*. Examen Critique du Mém. du Millian et de Grave, relative à une Maladie des Porcs. Nancy, 1822.

² *Plank*. Veterinärtopogr. p. 142.

³ *Hurtrel d'Arboval*. Op. cit. vol. ii. p. 752.

epizoöty, contagious in its nature, appeared among cats; it spread rapidly, and was very fatal in a short time. It began with loss of appetite, the cats looking as if suffering from cold, and a great desire to indulge in the warmth of the sun, or of stoves; there was great muscular debility, and there quickly supervened intense thirst, staring of the coat, watery eyes, and bilious vomiting. All the animals attacked by this disease died in from twenty-four to forty-eight hours. There was no doubt as to the contagious character of the epizoöty, for if the healthiest cats came near the diseased, or if they even went to the places where these had been, they were not long in showing symptoms of the disease.¹

The rabies in foxes appears to have been less prevalent during this year than in the preceding or subsequent years. It was observed among these animals in the forest of Thuringia; and at Jéna, a young fox, tamed and kept in a garden, became rabid when chained up, and bit its master. In the Voralberg, seventeen cows and goats became ill and died in the interval between May and September, and it was believed their deaths arose from the bites of rabid foxes.²

An extensive epizoöty was observed among dogs in Northern Siberia during this and the next year, and which was probably the first appearance of the so-called 'distemper' that had prevailed in Europe for more than sixty years. Wrangel, in his 'Expedition to the Polar Sea,' gives a lucid description of its progress and the effect of its ravages. 'The disease which, in 1821, attacked the dogs throughout Northern Siberia, did not make its appearance at Kolymsk till a year later than on the rivers to the west and along the Tchuktche coast. . . . The dog is fully as useful and indispensable a domestic animal to the settled inhabitant of this country, as the tame reindeer is to the nomad tribes. We saw a remarkable instance of this during the terrible sickness which, in the year 1821, carried off the greater part of these useful animals. An unfortunate Jukahir family had only two dogs left out of twenty, and these were just born, and were indeed yet blind. The mother being dead, the wife of the Jukahir determined

¹ *Rust.* Magazin, vol. xiv. p. 109.

² *Griss.* Oesterreich. Jahrbuch, 1824.

on nursing the two puppies with her own child, rather than lose the last remains of their former wealth. She did so, and was rewarded for it ; for her two nurslings lived, and became the parents of a new and vigorous race of dogs. In the year 1822, when most of the inhabitants had lost their dogs by the sickness, they were in a most melancholy condition ; they had to draw home their own fuel—and both time and strength failed them in bringing home the fish which had been caught in distant places ; moreover, whilst thus occupied, the season passed for fowling and fur-hunting ; and a general and severe famine, in which numbers perished, was the consequence. Horses cannot be made a substitute : the severity of the climate, and the shortness of the summer, make it impossible to provide sufficient fodder ; the light dog can also move quickly over the deep snow, in which the heavy horse would sink. It was once unwisely proposed to forbid the keeping of dogs on account of the quantity of fish required for their support, which is thus withdrawn from the food of the inhabitants. Each sledge of twelve dogs requires daily from fifty to seventy herrings. But if this measure had been adopted, so far from increasing the quantity of food at the command of the inhabitants, it would have deprived them of one of their chief means of procuring subsistence, as was clearly proved at the time of this great mortality among the dogs in 1821 and 1823. This highly injudicious proposal was happily rejected by the Government. . . . The short summer of 1821, which to the inhabitants of Nijni Kolymsk had been marked by so many failures in the produce both of the fisheries and the chase, was succeeded by a long winter of suffering. Our own position was a painful one, unable as we were to relieve the general distress. To the want of provisions was added a new misfortune, hitherto almost unknown in this district, namely, a wide-spreading malady among the dogs. This disease had shown itself during the summer on the banks of the Lena, the Jana, and the Indigirka. Very soon after the beginning of winter, it reached the banks of the Kolyma. As our intended journey over the ice depended on our having the ninety-six dogs required for eight sledges, I

sought anxiously to adopt such precautions as might secure those we obtained from infection. Orders were given to procure as quickly as possible at least a hundred healthy dogs, and to take them immediately to the greater and lesser Tchukotski rivers, to be kept there at the expense of the expedition, cutting off all communication with the neighbouring district. Part of our provisions had also to be conveyed to the store-house, which had been built near the Baranicha river. But whilst we were endeavouring to execute these plans, the malady spread so rapidly that we had the utmost difficulty in obtaining thirty-six dogs instead of the required ninety-six; and though they were instantly sent away, they almost all died. The mortality increased daily with the increasing intensity of the cold, and it soon extended to all the villages and settlements in the Kolymsk district. The inhabitants felt the loss of these valuable and almost indispensable servants more acutely than they did the scarcity, to occasional returns of which they are in a great measure accustomed and resigned. Such was the unhappy state of things at the opening of the new year (1822). As the time of our departure was near, I gave up all hopes of procuring more dogs in our own district, and sent one of the most trustworthy of the Cossacks to the Indigirka, where the sickness did not prevail, with a commission to purchase sixty, and to keep them in readiness, until further orders, near the greater Tchukotski river, feeding them well. On the 5th of March, I received information from him that he had found it impossible to collect more than forty-five dogs. As the intensity of the cold diminished, the sickness gradually abated, until at last it entirely subsided; but not until the inhabitants had lost four-fifths of their dogs. Most of those which survived were the property of the Cossacks.' These remained for a long time so weak as to be almost unserviceable. The epizooty appears to have generally ceased in the winter of 1822-23. 'The fisheries on the Kolyma had been generally successful, and the sickness among the dogs having entirely ceased, their numbers had again augmented.' Cases appear to have shown themselves shortly afterwards, however, as the Admiral says: 'On the 1st of

March we were overtaken by a Cossack who had been sent on from Nijni Kolymsk, with despatches. . . . I sent back with him two of the Indigirka sledges, as the dogs showed symptoms of an infectious distemper.' The epizooty appears to have had a remarkably wide range, according to the same authority, for he adds: 'It is remarkable that in 1821, the Tchuktches lost great numbers of their dogs by the same malady as that which made such ravages among those of the Kolyma, the Indigirka, the Jana, and the Lena.' In the Ustiansk expedition—a minor one, consisting of a detachment from Wrangel's exploring party—it would seem that the malady had been observed earlier than with the principal section. 'Lieutenant Anjou, accompanied by M. Iljin, mate, M. Bereshnich, second mate, Dr. Figurin, surgeon, and two sailors, arrived at Ustiansk in the beginning of the winter of 1820. After collecting the requisite number of sledges and dogs and a suitable supply of provisions, he hastened to remove his dogs from the influence of the epidemic then prevailing among those animals by sending them to Point Bikovskoi, on the easternmost embouchure of the Lena.'¹

With reference to this epizooty among the dogs, and which we have surmised to be analogous to what is commonly known as 'distemper,' but which is in reality a catarrhal fever, it must be remembered that the climate of Northern Siberia is favourable to the production of catarrhs in the human species. 'Catarrhal fever, and complaints of the eyes are prevalent, but only in October, during the thick fogs, and in December, when the severe frosts set in. . . . During my stay at Verkhoiansk, a kind of epidemic catarrhal fever prevailed throughout the district; the symptoms were violent oppression of the chest, noise in the ears, headache, etc. It made its appearance, when, after an unusually thick fog which lasted a week, intense cold set in suddenly, and increased from day to day. From the 23rd to the 26th of December, the temperature was 49°, 58°, 62°, and 64° below zero. A Cossack, whom I had previously sent forward with my papers, died of the epidemic. Everyone

¹ *Wrangel. Narrative of an Expedition to the Polar Sea.* London, 1844. Pp. 50, 73, 230, 318, 320, 361.

was more or less ill. I suffered most from a painful constriction of the chest, which did not leave me until after my arrival at Irkutsk, where I had medical assistance. It is a general opinion here, that this, and other dangerous epidemics which prevail among the natives, are not nearly so formidable to those who have but lately arrived in the country ; but when strangers have been exposed to the climate for some time they lose this advantage.¹

From 1820 until 1822, an 'influenza' reigned among horses in Saxony and Prussia, which, in succeeding years, spread over a large portion of the Continent. Tennecker and Dieterichs observed it at this period, and described it under the title of a 'chronic lung-and-liver inflammation (*chronische lungen-und leberentzündung*).² It will be more fully noticed for the year 1825.

A.D. 1822. A terrible eruption of the volcano Galongoon, in the island of Java. Boiling mud, ashes, burning brimstone, and stones were thrown a distance of forty miles from the mountain. Every valley within range became filled with a burning torrent, and the rivers, swollen with hot water and mud, overflowed their banks, carried away great numbers of people who were endeavouring to escape, as well as thousands of cattle, wild beasts, and birds.³ In Chili, there was also a severe earthquake, by which a tract of ground, measuring one thousand square miles, was elevated from two to six feet on the seaboard. The shell and other fish thus exposed to the air died, their dead bodies exhaled a most noxious effluvia, which was the cause of disease.⁴

In Ireland, typhus fever appeared in mankind in the Queen's County and County Kilkenny in December, and owing to constant wet, an unusual amount of disease prevailed among horses.⁵ In April, in the West of Ireland, it was reported that 'the cattle were dying by dozens for want of food,' owing

¹ *Wrangel*. Narrative of an Expedition to the Polar Sea, p. 372.

² *Tennecker*. Praktische Beobachtungen über die bei den Pferden herrschende Chronische Lung-und Leberentzündung. Ilmenau, 1823. *Dieterichs*. Handbuch d. Spec. Pathologie, etc.

³ *Lyell*. Op. cit. ⁴ *Bascome*. Op. cit. p. 155.

⁵ Public Journals.

to the condition of the pasture-lands, and the destruction of the hay crop in the previous autumn.¹

Typhus and spasmodic yellow fever prevailed in Paris in the human species; and during an outbreak of epidemic yellow fever at New Orleans in September and October, it was observed that the dogs suffered from the black vomit. More particularly was it noted that at Pensacola the vigorous hounds which had been recently imported, and had not yet begun to degenerate from the effects of climate, were the first to die.²

In England, pheasants died in large numbers from the presence of thread worms (*filaria*) in the bronchial tubes.³

During the summer heats, anthracoid diseases were frequent on the Continent of Europe. In France, they were especially prevalent in the departments of the Basses Pyrénées, Aveyron, and Corrèze, among cattle and mules.⁴ They were also destructive at Tarn.⁵ Glossanthrax followed upon the intense heat of the summer in Northern Seeland. In Silesia, where it also caused much loss, men who became infected from diseased animals perished.⁶ In its favourite haunt, Bavaria, anthrax attacked horses, cattle, and other animals.⁷ The same malady, in the form of anthracoid hæmaturia (*blutharnens*) was epizoötic in Nassau.⁸

Ovinesmall-pox was very rife in many provinces of Germany, and in the department of Haute-Marne, France, it raged continually from 1822 to 1834.⁹

Hydrophobia was markedly common among dogs in Holland.¹⁰

Before this period, according to M. Tisserant,¹¹ bovine con-

¹ Dublin Evening Post.

² Chabert. Hasper. Krankheiten der Tropenlädern, vol. ii.

³ Youatt. The Veterinarian, vol. vi. p. 179.

⁴ Comptes Rendus de l'Ecole de Lyon, 1824.

⁵ Santin. Mém. sur la Fièvre Charbonneuse observée sur les Bœufs et les Vaches. Castres, 1822. Saussol and Pradal. Mém. sur la Fièvre Charbonneuse qui a régné dans les Cantons de Saint-Amans, Brassac, Mazamet en 1822. Castres, 1823.

⁶ Pruess. Staatszeit, 1822.

⁷ Plank. Veterinärtopogr. von Baiern, p. 142.

⁸ Franque. Op. cit.

⁹ Recueil de Méd. Vétér. vol. xiii. p. 393.

¹⁰ Forster. Op. cit. p. 179.

¹¹ Journal de Méd. Vétér. de Lyon, second series, vol. iii. p. 402.

tagious pleuro-pneumonia was entirely unknown in the department of Ardèche, France ; but in this year it made its appearance there. It would seem that at this time oxen were, for the most part, employed to tow the boats trafficking on the Rhone, between Lyons and the sea, and that the majority of these animals came from Franche-Comté. In winter, when the river traffic was less active than at other seasons, these bullocks were depastured on the mountains in the neighbourhood. In 1822, a certain number of them, so depastured, were discovered to be diseased, and these propagated the malady. Nevertheless, it being winter, and the native cattle nearly all kept housed, without much communication between the stables, the contagion did not spread to any great distance, and was not long in being eradicated. It appeared again, however, in 1847. (See that year.)

A.D. 1823. A wet summer in England, but a dry autumn. Early in July, the sea in the vicinity of Exeter emitted noxious effluvia, and the fish taken in the neighbourhood were nearly dead. The water was coloured with an oily matter all along the coast. Great inundations during the hay harvest in England and Scotland, as well as in Ireland. Small-pox was epidemic in the latter country. 'The malignity of the epidemic constitution of the air was very remarkable at this time ; it interfered with the recovery of patients after surgical operations. Slight punctures, received while dissecting, were often succeeded by suddenly fatal attacks of typhus disease. That the malignant influence of the air was not only epidemic, but epizootic, was proved also by its symptoms, such as dark petechiæ in all parts of horses uncovered by hair (the tongue, nostrils, etc.), by glandular tumours, both internally and externally on the same animals.'¹

The malignant epizooty among horses which was observed in England in 1815 and 1819, was again present at the commencement of this year. 'The epizootic affection of 1823 was of the most serious and fatal description ; it affected the whole body with such inflammatory action in all its parts or organs, that an animal was very quickly reduced and destroyed

¹ *Stokes. Sketch of Epidemic Fever.*

by it ; and yet the most active antiphlogistic treatment was necessary, those cases doing best where the regimen was most vigorous, provided purging was not excited ; for when that state was induced the animal most generally died. . . .

'General Characters of the Epizootic Disease.—Inflamed eyes ; frequent pulse ; yellow-reddish mouth, very offensive ; tongue sometimes coated ; serous discharge from nose ; purging ; distended belly ; pain in feet ; swellings in legs, etc.'¹

Wirth² reports that 'rot' was destructive among sheep and cattle in France and Germany.

In the Mauritius, an epizooty, or rather a series of epizooties, attacked the domestic animals, and continued until 1825. In the later years all the vegetation was unhealthy, and children suffered severely.³

Anthrax prevailed in Saxony.⁴

Accounts from Norway, Denmark, and Russia, as well as those published in England, prove that rabies was very frequent not only among dogs and cats, but also wolves in the three first-named countries. It is also mentioned that the reindeer in Lapland had rabies ; and what was stated to be more wonderful, the pike in Helsingland, in the month of June, were said to be seized with a kind of madness, as thousands of these fish were found on the banks of rivers with their heads bruised and injured, as if they had been biting each other.⁵ However this may be, it is certain that the mysterious fox-madness yet manifested itself in Switzerland, as the following account will testify : 'In April, 1823, a fox crept into a stable at Volken, where there was a bitch with her puppies, which, after ten days, were killed, as they were suspected of being rabid. In October, a young man at Rafzerfeld was attacked and injured. The liver of the slain animal was found to be quite black. In the year 1824, mad dogs and cats were frequent in many neighbourhoods. Dr. Streiff informs us of the appearance of diseased foxes in

¹ *J. Field.* Op. cit. p. 26. *Youatt.* The Veterinarian, vol. vi. p. 122.

² *Wirth.* Op. cit. p. 124.

³ *Unienville.* Op. cit. vol. iii. p. 117.

⁴ *Dresdener Zeitschrift*, vol. v. p. 83.

⁵ *Hamburg. Magaz. für Ausl. Méd. Lit.* vol. viii. p. 273.

the year 1824-5 in the Canton Glarus as follows: 'Already in the year 1820, we have noticed the special appearance of diseased foxes in this, as in other cantons, and especially in the undermentioned localities. They became perfectly tame, seemed giddy, approached houses and stables, and were there easily killed. In the beginning of the year 1824-5, several goats in the neighbourhood of Bilten sickened, and in them symptoms of a quite peculiar disease showed themselves; these animals died. Subsequent experience proves that the malady was true rabies. In March, 1825, two foxes came to a stable in Nettstall, wherein was a bitch and a litter of pups. The bitch fought with one of these foxes; in the beginning she was seized with madness, bit her master, her pups, and several other dogs. Both the foxes, and the bitch, as well as the dogs bitten by her, were destroyed. In the unfortunate man hydrophobia showed its dreaded symptoms on the 9th of August, nearly four months after the injury, and two days afterwards it was truly manifest; he died in a few days. After this it was ascertained that diseased foxes had been seen in various places in the canton in the beginning of the year. The transmission of the sickness from place to place was easily followed. . . .

'The disease lasted until the winter of 1826-27, and the number of infected animals was considerable. The contagion was most frequently communicated to cats, more seldom to goats and horned stock; only one horse was attacked with rabies. Many foxes were found in various neighbourhoods dead from the malady. Under date of the 7th December, 1825, the Sanitary Commission of the Canton of St. Gallen reports, that throughout the whole year here and there traces of mad animals had been witnessed, especially foxes, which had attacked many cattle upon the Alps, as well as in the stalls; cats, too, were attacked, and these at a later period died exhibiting all the terrible symptoms of hydrophobia. For several years past, a peculiar disease has been noticed among foxes; but in this year the true rabies was unmistakable, and proved itself as such only too clearly by its contagious properties. Since October in Ober-Toggenburg and Utznacht,

the disease has broken out among several head of cattle which had been previously bitten by foxes; also in the Canton Aargau, foxes suffering from madness were noticed in 1825. In the Canton Zurich, though only in Embrach and Stäfa, were suspected foxes observed; but the dogs and cats were frequently affected, as well as suspected. In the Canton Schwyz mad foxes were also met with; and at Altendorf a cow and an ox died of hydrophobia; these had only been a few weeks from the pastures, and there were not any traces of wounds about them. In the year 1826, suspected foxes showed themselves in Bulach and Wildberg; rabid dogs in several places. In 1827, foxes suspected of rabies appeared in Lindau, especially on the Rafzerfeld; by these men and animals were attacked, and a woman was bitten by a badger supposed to be rabid.

‘In 1828, foxes supposed to be rabid showed themselves in Zurich, in Himweil, Pjäffikon, Bulach, and Regensberg, and a badger and a marten were killed because suspected of rabies. In the year 1829, the Sanitary Commission only received intelligence of one fox supposed to be mad, and which was in Freinenstein. In 1830, such animals appeared in the parishes of Kuonau, Meilen, Bulach, and Regensberg. In the first half of the month of July, a diseased fox crept into a stable full of cattle in the parish of Rümlang, and bit an ox in the hind leg. It was killed, examined, and declared to be rabid. Towards the middle of August this ox was attacked with rabies and died on the 15th of that month. On the 27th of April, in the next year, a cow in the same stable, and probably bitten by the same fox, was attacked with symptoms of rabies and died on the 30th—forty-two weeks after the appearance of the fox. In July, 1831, a man was attacked by a fox in a field at Oberdorf, in the parish of Regenstorf, and bitten in the hand. Besides this, no other case of the kind came under the notice of the Sanitary Commission for this year.

‘In 1832, a supposed rabid fox was killed in the parish of Weinengen; rabid dogs showed themselves in several neighbourhoods, as also in the Cantons Lucerne, Zug, and Aargau. In 1833, no cases were reported; but in the interval the malady had by no means ceased in other localities, particularly in the

neighbouring Canton of St. Gallen, as the published review of the doings of the Sanitary Commission for October, 1832, to October, 1833, show. According to these reports, it showed itself here and there, but not so virulent as in the previous years, and characterized by sometimes nervous symptoms, at others by splenic complications, but in others again by indications of pure rabies. On the 18th of November, 1832, a fox supposed to be infected with the malady appeared in broad daylight at Ganis, and came in contact with a dog, but the latter sustained no wounds; without any other known cause, unmistakable symptoms of hydrophobia manifested themselves in the middle of March, 1833, in this dog. In the middle of March the same kind of foxes appeared again in larger numbers in Upper Toggenburg, and from the middle of September in several parishes in the district of Gester. In the present year, 1834, the disease broke out again in the Canton Zurich, and attained a greater extension than in previous years.

‘On the 10th of March, intelligence was received of the first case by the Sanitary Commission, namely: that in Tössthale a rabid fox had attacked and bitten a dog, and was afterwards killed. From that time the cases became more numerous, and even now—the end of November—it has not been extirpated. . . . In this year nearly three hundred foxes have been killed in this canton, of which number one-third was supposed to be rabid, and the remainder were killed for the purpose of obtaining the reward offered for dead foxes. One of the latest reports of the Sanitary Commission of the Canton Thurgau, refers to this subject in the appearance of rabies in an ox in Diessenhofen, which was attacked on the pasture and bitten in the nose by a fox on the 13th September; on the 14th of October symptoms of madness showed themselves, and on the 15th it died. But far more interesting is the sad case that occurred in the Canton Bündten but a short time ago. A girl bitten by a fox died of hydrophobia, notwithstanding all prophylactic treatment.’¹ In the north the disease had reached the frontier of Nassau in 1823. ‘The

¹ *Köchlin.* Op. cit. p. 13.

first diseased foxes showed themselves in June, 1823, in the district Usingen. The disease spread itself by degrees in the districts on this side of the Lahn. Upon the heights of the Taunus Mountains, it attained its greatest virulency in the months of November and December, 1823, and January and February, 1824. It reached the districts on the other side of the Lahn in April, 1824, and it was not until July, October, and November of the same year that it showed itself upon the Rhine. In the neighbourhoods on the other side of the Lahn, it reached its greatest intensity during the interval between May and October, and from that time it appears to have gradually declined. Traces of the disease, however, were noticed in February, in October, November, and December, 1825; in January, March, and May, 1826; and lastly in April and May, 1827. Since the latter period, until the close of the year 1833, no diseased foxes have been seen.¹ At Upper Hesse, in the Grand-Duchy of Darmstadt, where it appeared, Ritgen describes it: 'Already in the commencement of the year 1824, several foxes were found dead. Their deaths were attributed partly to hunger, partly to mange; but there must have been other reasons, as they were not emaciated, neither were they mangey, nor did they die a violent death. On the 1st of March, 1824, the clergyman at Wahlen, near Kirtorf, reports that his dogs had been attacked and bitten by a fox on the previous evening, and within the yard. The fox was killed. On the twelfth day after the injury the dogs showed all the symptoms of rabies and were killed. On the 21st of September a fox attacked a young woman in broad daylight at Brenngeshain. The fox was killed. On the 23rd of December, 1824, a fox attacked two poor girls in the garden of the Weismühle at Grossenbuseck, and was slain by a miller. On the 21st of November, 1824, another fox at daybreak entered the sheep-pen of George Jung, at Grosslumda, wherein were seven sheep, and bit four of them; it also was killed. On the 16th of December the burgermeister of Grosslumda reports that three of the bitten sheep were attacked with madness. In the night between the 1st and

¹ *Franque.* *Über die Seuche unter den Füchse.* Frankfort, 1827-8.

2nd of January, 1825, a fox appeared in the sheep-pen of George Dörr of Reinhardshain, and seriously wounded several of the six sheep which were there. On the 20th two of the bitten sheep were dead; three looked very unwell, and the sixth, without any appearance of having been bitten, was attacked with rabies. A dog belonging to the shepherd Dechert, of the same place, was bitten by the same fox, and on the 20th became rabid. We learn from the forester Weitershausen of the same place, that a dead fox had been found in the field, and twenty-four hours afterwards another, which lay upon the first. On the 2nd of January, 1825, two foxes were killed at Beueren. One of these foxes wounded a miller's dog, and it sickened on the 29th of the same month.

‘On a general *battue* in the district of Grünberg, ten foxes were slaughtered up to the 22nd of January, and four of these were immediately recognized as diseased. In Maiches, on the 15th of January, a fox which ran into the place was killed. On the 22nd a fox came into the town of Alsfeld and was killed. On the 1st of February, a fox entered the town of Konradsdorf, and placed itself before the dogs, which immediately ran away; this animal was destroyed. On the same day, towards noon, a fox was found in the yard of the burgermeister of Lissberg, which defended itself and was killed. On the 17th of this month, two foxes were discovered in the Vilbel wood, near an earth, lying dead not far from each other.’¹ ‘In the night of the 20th and 21st January, 1825, the shepherd Rauff, of Beuern, heard his dogs, which were in the cowshed, bark loudly; the cow also appeared very uneasy. He ran into the place and found the dog still whining, and with a long bleeding wound on the nose. This animal became unwell on the 30th of January, and died on the 1st of February. On the 9th of February the cow was also attacked with hydrophobia, and died. On the 3rd of February a fox was slain at Maulbach; at Grebenau on the 25th, a fox was shot who had attacked men. In the night of the 27-8th of February, the watchman at Crumbach noticed the strange barking of a shepherd's dog. In the morning a fox was found before the barn; it went

¹ *Ritgen.* Henke's Zeitschr. vol. x. p. 1.

away, but was shortly afterwards killed. On the 7th of March a fox was slain in a house at Udenhausen; on the 11th a diseased fox was shot in a woodshed at Storudorf; on the 19th, at the shepherd's house at Daubringen, a fox was found dead; on the 26th a slain fox was sent in from Crumbach; on the 27th one from Steinberg; on the same date a fox attacked a dog in the wood of Heibertshausen, and was shot. On the 31st the landrater of Zangen, Crumbach, reports that a similar malady had occurred among the cats, as not only had he lost six cats, but he had been assured by the forester Lang, in Steinberg, that many cats had been found dead. On the 12th of April, at five o'clock in the morning, a fox ran round the village of Wohnbach, near Hungen, and was slain. On the 16th, at three o'clock in the morning, the shepherd at Hermannstein heard a piteous whining from his two young dogs in the stable. He found a fox sitting upon one of these dogs and snapping at it; he destroyed it with a stable-fork. In Lower Hesse, the malady was very prevalent, and attracted much attention.'

The following is worthy of notice for this locality: 'In the month of June, 1826, the cattle belonging to the parish of Nordeck (Marburg) were being pastured in a wood; suddenly there came an animal towards the cowherd, and which was unknown to him. It attacked the bull, which attempted to defend itself with its horns; the cowherd knocked it down with his stick, and hurried with his herd to the village; soon after he returned to the place with a forester. The animal, which this man recognized to be a badger, was recovering, but it was destroyed by them.'¹

Hertwig² says that this epizooty was not noticed in the North of Germany; in Southern Germany it appears to have existed for many years. So late as the month of August, 1836, a man and a girl were wounded by a fox in the bailiwick of Rottenburg; the girl died of hydrophobia.³ In the spring-

¹ *Busch.* Zeitschrift für die Thierheilkunde, vol. ii. p. 49.

² *Magazin für Thierheilkunde*, vol. i. p. 277.

³ *Plieninger.* Würtemb. Corresponbl. vol. viii.

time of 1837, many mad foxes were killed in the country of Ulm.¹

With regard to the reported epizooty of rabies among the reindeer in Lapland, I cannot find any specific account, but Bascome² asserts that 'the Laplanders suffered greatly in their cattle from *murrain*; upwards of five thousand head of oxen were carried off—wolves even being destroyed by it, so intense and general among the lower animals was the distemper.' The malady would appear to have been malignant anthrax, but its outbreak was ascribed to the attacks of insects (like other outbreaks of this plague in other parts of the world), or rather a species of worm said to be peculiar to Lapland, and which was originally mentioned by Linnæus³ under the name of the *furia infernalis*. And although that great naturalist is said to have altered his opinion late in life, and even to have expressed doubts as to the existence of the insect, yet, as Dr. Clarke, when travelling in that country, Norway and Sweden, mentions it,⁴ and as the Laplanders themselves have

¹ *Hering*. Magazin für Thierheilkunde, vol. v. p. 189. ² *Op. cit.* p. 155.

³ Linnæus's description is as follows: 'The *furia infernalis* inhabits the vast marshy plains of Bothnia and Finland, where it crawls up shrubs and sedge-grass, and being carried forward by the wind, penetrates suddenly into such exposed parts of men and horses as are not perpendicularly situated. It quickly buries itself under the skin, leaving a black point where it had entered; which is soon succeeded by the most excruciating pain, inflammation and gangrene of the part, swooning, and death. This all happens in the course of a day or two, frequently within a few hours, unless the animal be immediately extracted, which is effected with great caution and difficulty, by applying a poultice of curds or cheese, or carefully dissecting between the muscles where it has entered.'—'Syst. Nat.' vol. i. part vi. p. 3081. Cura Gmelin, Lipsiæ, 1788.

⁴ Dr. Clarke's account is as follows: 'A remarkable circumstance happened to the author, just before his arrival at this place (Sundswall), on the 1st of July. He had been reading the "Life of Linnæus" in the open travelling-waggon as he proceeded on his route, and was giving an account to his companion of the marvellous manner in which that celebrated naturalist had nearly lost his life in consequence of being wounded by a worm, said to have fallen from the air, the *furia infernalis*; expressing, at the same time, his incredulity as to the existence of such an animal, and, of course, his disbelief of the fact. At this moment he was himself attacked in the same extraordinary manner, and perhaps by the same creature. A sharp pain, preceded by slight irritation, took place in his left wrist. It was confined at first to a small dark point, hardly visible, and which he supposed to proceed from the sting of a gnat. Presently it became so severe that the whole of the left arm was affected quite to the shoulder, which, as well as the joints of the elbows and fingers, became benumbed. The consequence might

no hesitation in asserting that such a creature exists, I will here transcribe Mr. de Buke's account, though we need not believe altogether in the presence of this insect, and for several reasons which shall appear :

'In 1823, the Laplanders are stated to have suffered so greatly in their herds, that five thousand head died from the sting of this creature ; and that even the wolves and other animals that preyed upon the dead carcasses, caught the infection, and died with the same symptoms. A Laplander, who possessed five hundred deer, on perceiving the destruction among them, thought it best to kill the whole herd ; but so quickly did its ravages spread, that before he could accomplish his purpose they all died. Great numbers of cattle and sheep were likewise destroyed by its attacks, and it fell in some degree upon the human species, a few having become victims to it. A young girl, who was shearing some sheep that had died from the attack of the *furia*, felt, while thus employed, a sudden pain in one of her fingers, which rapidly increased, and on examining the part, she found a small puncture, like the prick of a needle ; her master, who was by,

have been more serious, if he had not resorted to a mode of cure pointed out by the inhabitants, namely, a poultice of curd, to which he added the well-known Goulard lotion, prepared from the acetate of lead.'—'Travels in Various Countries of Scandinavia,' etc. London, 1838, vol. i. p. 208.

Mr. Inglis refers to an occurrence of this nature when in Norway : 'Sitting one day along with a peasant, who had been my guide to a trouting stream, upon a trunk of a tree in some boggy ground, covered with coarse grass, and here and there a few cranberry bushes, I saw a very small fly of a grey colour suddenly light upon the back of my companion's hand, and as suddenly fall off. Immediately after he lifted up his hand, complaining of acute pain, and there appeared a small blackish speck where I had seen the insect alight. He immediately said he was bitten by a worm, and made the utmost speed to reach a house where he might have a curd-poultice applied. The hand and arm swelled, and were much inflamed, and the man cried out with the excessive pain. The moment I saw the hand, and heard the man complain of acute pain, and say he was stung by a worm, I called to mind the circumstance related of Dr. Clarke, and from the subsequent symptoms, application and cure, I could have little doubt that both were stung by the same creature. I am no naturalist, but I have thought it right to relate a fact that came within my own observation, the value of which I leave to be estimated by others. I would only add that neither Dr. Clarke nor anyone who has had a poultice applied for the purpose of extracting the worm, have said that they saw the worm when it was extracted.'—'Personal Narrative of a Journey through Norway,' etc. London, 1835, p. 227.

had the presence of mind to cut the finger off on the spot, and it was the means of saving her life. . . . The pest is stated to have been confined to Russian and Swedish Lapland, and did not spread higher than Muonioniska, Norwegian Lapland fortunately was not visited with this calamity; and, in order to prevent it from being introduced, all furs, during the year of its prevalence, were forbidden to be purchased. (I have since ascertained that, in consequence of the alarm excited by the reported ravages of the *furia*, an edict was actually issued from the Amtmand of Finmark, prohibiting the introduction of all furs into the country that year.) As these accounts were unsatisfactory, and I could not hope to obtain better information from such remote quarters, I was induced also on this occasion to apply to Mr. Retzius, who, having examined the reports of health of the northern provinces of Sweden, transmitted annually for the information of the Government, has forwarded to me the result of his inquiries, by which it appears that during the summer of 1823, and the year following, there was a great mortality among the reindeer in Norbotten and Lapland, which was attributed to some unwholesome quality in the moss; but that he, as well as others of the faculty at Stockholm, had been led to consider the disorder by which they were attacked as a particular variety of hydrophobia. It appears, likewise, that the deer are not unfrequently subject to another complaint—an inflammation of the brain; and that, upon opening the part affected, a small vesicular worm (the *tænia cerebialis*) is found. The most remarkable symptoms of this disorder, which comes on with great suddenness, are an extraordinary degree of fury, during which the animal attacks, and even kills, its owners, and frightful convulsions, terminating in death.¹

In considering the nature of this epizooty, and its supposed origin from the bites of insects, it may be noted that the forests of Lapland and Siberia abound with swarms of these creatures, which cause the reindeer the most intense annoyance, and compel their owners to move them to the sea-coast or open districts at certain seasons. Not the least

¹ *De Capell Brooke.* Travels in Lapland. London, 1827.

harassing of these creatures is the *Æstrus Tarandi*, or gadfly, of the reindeer, which, not content with wounding the deer, deposits its ova in the wound, and another variety performs the same operation in the mouth and nostrils.¹

A.D. 1824. Locusts caused immense devastation in India, and the myriads of these insects which, in the preceding years, had invaded Europe, in this year occupied Galicia, Silesia, and Brandenburg.²

In England, rot was more than usually destructive among sheep; it ruined many farmers, and in some agricultural districts gave rise to very great depression. One farmer alone lost sheep valued at more than £3,000 in three months. The same malady was very common in France and Germany according to Wirth.

Canine rabies was epizootic in Sweden; and rabies was also widely prevalent among wolves, foxes, cats, and reindeer in that country.³ It was also present in a general manner in Russia, Norway, and England,⁴ and, it appears, even extended to Ireland. 'In Ireland, in August, many cases of hydrophobia occurred, owing to the number of mad dogs running about the metropolis.'⁵

An epizooty is reported as prevailing among the reindeer in Sweden;⁶ but it was probably the same that has been commented upon for the preceding year.

A deadly exanthematous fever destroyed large numbers of cats in Dresden.⁷

Epizootic ekzema prevailed generally throughout Italy. It affected cattle, sheep, pigs, and even fowls, and spread from Upper to Central Italy, as if it had come from Switzerland; but, according to some accounts, without manifesting itself in

¹ For interesting details concerning the *Æstrus Tarandi* and its effect on the reindeer, as well as the means by which the Laplanders and other people avert its persecutions, see Mr. Brooke's excellent description in the above-mentioned work; also his 'Travels in Norway, Sweden,' etc., pp. 41, 198. *Clarke. Travels in Various Countries of Scandinavia, etc. Lloyd. Scandinavian Adventures, vol. ii. pp. 225, 226. Erman. Travels in Siberia, vol. ii. pp. 375, 500, 509.*

² *Ritter. Die Erdkunde von Asien, vol. vi. pp. 794, 798.*

³ *Suenska Läk. Sellsk. arb, 1824.*

⁴ *Gerson und Julius. Magazin, vol. viii. p. 273.*

⁶ *Public Papers.*

⁵ *Belfast Newspaper.*

⁷ *Dresdener Zeitschrift.*

any other countries.¹ Metaxa,² however, asserts that the epizooty showed itself as early as 1823, and lasted until this year, and that it came from Hungary. Haupt states that it was observed in Southern Russia in this and the following year,³ as well as in France⁴ and Germany⁵ during the two succeeding years. In Russia, Cattle Plague was epizootic at the same time as this ekzematous fever.

In India, the rainy season commenced earlier than usual, and the atmosphere was particularly luminous. Malignant cholera broke out not far from Calcutta, and in that city a typhoid and exanthematous fever raged. Twining⁶ informs us that at this time an epizooty of a most fatal character was present among dogs. 'During the existence of widely-spreading epidemics, unusual mortality among animals has been considered a collateral proof of a contaminated atmosphere. Although I have not been able to ascertain that any general mortality occurred among animals, like the epizooties that have occasionally accompanied epidemic diseases in the north of Europe, it may be worthy of record, that the year 1824 was remarkably fatal to dogs in the vicinity of Calcutta, the sickness among these animals commencing in August. They were seized with loss of appetite, excessive thirst, violent action of the heart, that could be seen at a considerable distance; and in some cases there was yellowness of the eyes and skin, with distension of the belly, though the dog had taken no food for several days. These symptoms were followed by a purging, which carried off the animal in a day or two after its commencement. On dissection, the stomach was found empty, the spleen unnaturally turgid with blood, and the liver streaked with dark purple and black patches.

¹ *Crepetti*. Della Malattia Contagiosa delle Bestie Bovine e degli altri Animali, etc. Milan, 1824. *Fauvet*. Della Zoppina e Cancro Volante, ossia Cenni Teor. Prat. sull' Essantema Epizootico regnante. Milan, 1825. *Lamberlicchi*. Cenni Teor. Prat. sull' Essantema Epizootico ricomparso in Romagna, impropriamente caterizzato per Cancro Volante o Glossantrace. Pesaro, 1826.

² *Annali*, vol. i.

³ *Haupt*. Ueber einige Seuchenkrankheiten der Hausthiere in Sibirien. Berlin, 1845. ⁴ *Recueil de Méd. Vétér.* vol. xxii. p. 80. ⁵ *Franque*. Op. cit.

⁶ *Twining*. Observations on the Fever in Calcutta. Trans. Med. Soc. of Calcutta, vol. ii. p. 9.

Various modes of treatment were tried, but found of no service. In one kennel, ten couple out of twelve died. One gentleman lost fifteen out of sixteen dogs, another lost eleven out of twelve. In one pack of forty-seven couples, forty-three couples died in two months; in these last the disease commenced in the beginning of October.'

A.D. 1825. Yellow fever was epidemic in South America, and very deadly at Rio de Janeiro, where the drought had been excessive, and was succeeded by heavy rains. At one settlement alone, Aracaty, the mortality in a short time was estimated at 30,000 people. Great numbers died during their efforts to reach the coast for water, and wild as well as domestic animals perished.

Small-pox was epidemic at Hamburg, and plague at Cairo.¹

At Langenaufach, in Bavaria, a badger, supposed to have been bitten by a rabid fox, wounded two children, and a horse and a cow. Count Sponek, who had been investigating the subject of rabies, thinks that 'had it not been mad, the great dread of mankind, peculiar to these animals, would have prevented its attacking people in broad daylight.'²

What was designated a 'gastro-bilious fever,' appeared among cattle in the commune of Barbania, Piedmont.³

The Cattle Plague commenced to spread again from its supposed home, towards the North, South, and West. In this year it was extending in the governments of Pskov, Novgorod, and Siberia. In 1826, it was imported into Esthonia, Livonia, and Sweden; in the following year it was in Kurland; and in 1828-29, it had reached the government of St. Petersburg, had ravaged the whole of Southern Russia, Moldavia, Wallachia, Hungary, Silesia, and Bohemia, even to the very frontiers of Saxony. In 1826, it was preceded in Russia, according to Professor Jessen of Dorpat, by epizoötic ophthalmia, ekzema, and anthrax. 'In the summer

¹ *Bascome*. Op. cit. p. 156.

² *Sammlung Naturhist. Jägerbeob.* Heidelberg, 1826.

³ *Lessona*. Storia della Mortifera Malattia fra le Bestie Bovine di Barbania. Turin, 1827.

of 1826, there raged such a terrible heat and drought as had not been seen before by the oldest people. The woods were scorched everywhere, and the air was so filled with smoke, that for several weeks the sun was scarcely visible for a single day; in the evening, when it did appear, it looked like a blood-red disc without rays, so that one could look at it direct without inconvenience. At the beginning of June, there broke out an epizoötic inflammation of the eyes among the horses belonging to the regiments Graf Araktschejef; this ophthalmia was of such a virulent character, that it completely destroyed these organs. At the same time many cattle suffered from the foot disease (*Klauenseuche*). At the end of June, and in July and August, anthrax appeared among the horses, and even many fishes caught in the river Wolchow were covered with tumours and foul sores; crabs were found dead on the banks. The Cattle Plague (*Löserdürre*) soon followed.¹

Anthrax fever was epizoötic in Nassau.²

For several years horses had been suffering from an epizoötic fever over nearly the whole of Europe, the nature, causes, progress, and the contagious or non-contagious properties of which, gave rise to much discussion. It had been more particularly observed between the years 1824 and 1828; and from the facts furnished in the numerous descriptions published concerning it, Heusinger was of opinion that it was a 'nervous catarrhal fever,' which might perhaps be compared with the spotted typhus in man. From its appearing at many distant places during the autumn of 1824, it was conjectured that its origin was due to some special miasmatic influence, and that it may also have generated a virus by which it could be transmitted from the diseased to the healthy. Nördling gives an excellent description of the epizoöty as it appeared in Sweden; though it is to be remembered that it was in Denmark before it was in Sweden—probably in 1823—and that in all likeli-

¹ *Jessen*. Die Rinderpest mit besonderer Beziehung auf Russland dargestellt. Berlin, 1834. Also see *Lorinser*. Untersuchungen über die Rinderpest. Berlin, 1831. *Veith*. Handbuch der Veterinärkunde, 1831.

² *Franque*. Op. cit.

hood it was prevalent in Saxony and Prussia from 1820 until 1822.

Nördling writes: 'The malady, the history of which I am about to describe in a few words, is common among the horses in the province of Scania, and also among those of the Royal Guard at the Capital. At the commencement of October of the past year (1824), it was observed for the first time in the squadrons of the Prince Royal's Hussars, stationed at Malmoe, and thence it spread into the town and the neighbouring country. In the month of January, the disease had so diminished that it was hoped it would completely disappear; when, all at once, it again showed itself among the horses of the Scanian regiments of cavalry—the officers of these regiments having been collected in readiness for the manœuvres in April. In the beginning of February, three horses belonging to the Royal Guard were attacked by the disease; two of these had just returned from Scania, where during the autumn and the past year they had been depastured with the horses belonging to the regiment of Hussars of the Prince Royal. The disease had spread itself progressively among all the horses of the squadrons of this regiment; but beyond these, it had not yet attacked more than two horses in the capital, one of which was found in the vicinity of the diseased horses of the Royal Guard. There could scarcely be a doubt as to the epizootic nature of the malady, nor yet of the necessity for providing against its ravages. It is neither a new complaint, nor yet is it a rare one. From what I have been able to observe of it, I am led to believe that it has a great analogy to the malignant putrid fever of the horse described by Viborg, or perhaps his epizootic malignant fever—it, in my opinion, being nothing else; or the pulmonary inflammation of Veith, with its accompanying putrid and bilious fever; or one of those modifications of malignant anthrax mentioned by French authors, and whose principal characteristic consists in disease of the lungs and liver. All the phenomena observed during the progress of the disease, as well as the lesions discovered after death, testify to the existence of an inflammatory state, the most intense degree of asthenia, and a great tendency

to pass into a condition of gangrene and putridity. There is also to be noted exudation of lymph as one of the features of the disease. The organs which principally suffer are the lungs and the liver; it is for this reason that the malady is known among the people by the name of "putrefaction of the lungs." The disease generally manifests itself suddenly and without any premonitory symptoms. The sick animal does not possess the slightest appetite, and has the greatest loathing for corn; he hangs his head, and altogether shows a great degree of prostration. His pace is very slow, and when forced to move, the anterior extremities are stiff and extended, while the posterior part of the body is unsteady and sways about. When allowed to stand, the two extremities on each side are always in the same position; sometimes symptoms of vertigo have been remarked from the onset of the attack. A sharp hacking cough is not a very rare symptom; the nostrils are dilated, and often there flows from them a foetid, orange-coloured fluid; the respiration is shallow and hurried, and the movements of the flanks are accelerated; the conjunctivæ and the mucous membrane of the mouth are yellow. The eyes are dull and fixed, and often tearful, particularly when the malady is most severe; a febrile condition is manifested at the very commencement, with erethismus, which sooner or later changes into a torpid state—a circumstance observed sometimes from the beginning of the disease; cold and hot stages succeed each other alternately, and the latter are denoted by a burning heat about the eyes, the upper lids of which are often drooping. The pulse is sometimes diminished—slow and weak—at other times accelerated and strong; the impulse of the heart can be very distinctly seen on the left side of the chest; the tongue is foul, hot, and covered with mucosities; the excretion of the urine and fæces is slowly performed; the urine is at the beginning clear and ammoniacal, but later it is muddy, and the excrements are hard and covered with mucus. Diarrhœa is not unfrequently present, and the discharges may be even mixed with blood, while the animal exhibits a most marked degree of debility. With horses the penis hangs pendulous from the sheath, and

with mares the lips of the vulva are seen in motion. The throat as well as the skin is in motion, even when the cough is not present. At the beginning of the disease, the horse manifests a great desire to lie down, and he gets up but slowly ; more advanced, he lies almost continually. When the malady has attained its highest degree, the respiration is most troubled, and the animal even twists himself about as if to obtain relief from his sufferings ; it is at this period that we often observe convulsive movements ; the breath is sometimes foetid, and the same odour is perceptible in the suppuration set up by setons ; œdematous tumours show themselves on different parts of the body, oftenest about the thighs and under the abdomen. Some horses have had their head tumefied, but only with one of these has the inflammation extended to the interior of the mouth. The skin is clammy and difficult to clean, and the hair is rough. The disease lasts five, nine, and sometimes even twenty-one days or more ; the salutary crisis is brought about by diarrhœa or general sweats, and muddy sedimentous urine. After death, an examination of the bodies presents the following changes : the hair is easily pulled out ; the muscles are relaxed, and are softer and paler than usual ; in the cellular tissue are found many deposits of a yellowish fluid. An acrid heat remains for a long time after death, and the mass of the blood is found in a greater or less state of dissolution ; the lungs are gangrenous, their colour is like that of goose excrement, and they are frequently disorganized to such a degree that we can scarcely recognise them because of their state of putrefaction. This latter is more or less extensive ; not unfrequently it invades the whole mass of the lungs, at other times it only occupies certain parts of these organs ; while again the air-cells are found dilated to the size of a nut, or collapsed and impermeable to the air. Abscesses in the substance of the lungs are not very rare. In the thoracic cavity is always discovered much fluid, variable as to quantity and quality, being sometimes clear, yellow, and without any marked smell ; at other times thick, dark or grumous-coloured, foetid, and mixed with blood ; the lungs are often covered by an exudation of plastic lymph which

forms yellow false membranes resembling cheese. The pleura and its prolongations are always noticed to be in a state of inflammation or even gangrenous ; the pericardium externally is the same ; the heart is usually normal, although at times it is larger and softer than in health, and speckled with ecchymosed patches ; the presence of fibrinous concretions in the auricles and ventricles is often remarked ; the veins of the stomach and intestines are distended with blood ; blueish stains of different dimensions, and at times aphthæ, are found in these organs, but they are rare, and in the majority of cases all these viscera are in a healthy state.

‘ The etiology of the disease is not yet determined ; but it seems reasonable to suppose that the affected horses had acquired a particular predisposition, which, through debilitating influences—such as great fatigue, musty hay, bad water, marshy localities ; cold, damp, draughty stables ; poor pasture ; cold, foggy weather, etc.—became changed into actual disease capable of propagating itself by contagion. One thing is at any rate certain, and that is, that many of these conditions were in existence at Malmoe, where the malady first manifested itself. The whole of Scania, without even excepting Malmoe and its environs, is low ; and this is why we observe scrofulous diseases in man to be almost endemic there. The summer of 1824 was remarkable for sudden transitions from heat to cold, and for humidity. During the autumn the sky was always cloudy, and, as a consequence, the weather was misty and cold. It must also be mentioned that many malignant maladies attacked the human species, as well as animals, during the preceding and current year. Typhus fevers and small-pox were rife among men, and hydrophobia among the domestic animals ; inflammation, followed by gangrene of the spleen, committed great ravages among cattle in the island of Gottland and some other provinces ; and even the reindeer in Lapland have been attacked by diseases. It seems to be beyond doubt that violent volcanic influences have been the cause of the phenomena I have indicated ; yet there is another source from whence the disease may probably have been derived : the contagion came

hither from Denmark, where the disease manifested itself before it was observed with us. Our neighbours (the Danes) had not ceased to sell their horses here until prohibited.¹

In France the disease appeared at Rouen at the commencement of the winter. In April it was very prevalent in the departinents of Calvados, La Manche, Mayenne, Maine-et-Loire, the Loire Inférieure, Sarthe, Loire-et-Cher, Eure-et-Loire, Loiret, Marne, and other places. The mortality was more considerable in the Lower Seine and at Paris than anywhere else, and it was not generally characterised as a contagious malady. Girard's description is perhaps the best of those published in France for illustrating the character of this epizöoty as it showed itself in that country: 'According to the investigations collected and communicated by MM. Prévost, senior and junior, veterinary surgeons at Rouen, the first horses affected were observed at the commencement of the winter in the valley of Fleury, distant about two myriamètres from the principal town of the Lower Seine. This valley, at the bottom of which runs a stream, and which is encircled by high wooded hills to the north-west, appears to have been not only the centre from whence the disease sprung, but the theatre of its greatest ravages. . . . It did not resemble any affection so much as that described by Chabert in the "Veterinary Instructions," under the somewhat vague name of anthracoid fever (*fièvre charbonneuse*). That which occurred here, nevertheless, ought to be rather considered as gastro-enteritis, nearly always complicated with angina, inflammation of the omentum, carditis, and pericarditis, and sometimes also with pleurisy, pneumonia, and hepatitis. It began with a sudden loss of appetite, hanging head, rigidity of the dorso-lumbar region, and stiffness of the posterior extremities. The movements of these parts became very restricted, and progression embarrassed; the animal dragged his abdominal members, and reeled about much. The pulse from the beginning began to augment in quickness, and numbered from sixty to eighty beats a minute; it was as full as it was hard, and at other times it was weak and

¹ *Nordling*. Recueil. de Méd. Vétér. vol. ii. p. 444.

almost imperceptible. The abdomen became tense without being tympanitic; the respiration laborious; the mouth dry and pasty; and progression more and more difficult. The majority of the horses could only maintain the recumbent position; others could scarcely stand; and some never moved from a fixed attitude from fear of falling. In proportion as the disease progressed, so did the vital powers appear to concentrate in the interior; the skin lost nearly all its sensibility—to such an extent, indeed, that there arrived a period during which the horse exhibited no pain, and when, to establish points of derivation and bring about an advantageous revulsion towards the surface, incisions were made in the skin. The alvine evacuations became rare and difficult; the dry pellets were covered with a glairy mucus. The urine was sometimes laden with salts, and red-coloured, sometimes limpid and crude; it accumulated in the bladder, and the animal was unable to expel it, notwithstanding continual efforts. Nearly all were heard, when the disease was at its height, to grind their teeth at certain intervals, and all had a marked elevation of temperature at the root of the mane and over the whole parietal region. These pathognomonic symptoms were constant, though variable in their intensity, and nearly always accompanied by other particular phenomena. Thus, lachrymation often announced the invasion of the disease; the conjunctivæ were infiltrated, assumed a purple tint on a yellowish ground (if we may so speak), and were marked by vesicles; the humours of the eye looked hazy, and the lucid cornea lost its transparency. Commonly enough the sheath or the udder were œdematous; the penis was extruded and remained pendent, as if paralyzed; and the scrotum, instead of being moistened with an unctuous matter, was covered with a dried substance. In many subjects the posterior members became swollen, which rendered walking all the more difficult. The beating of the flanks, which was frequently remarked, was never constant, but continued for a certain time, then disappeared, and was renewed again at irregular intervals. Generally the tongue became foul, was covered with a black epidermoid layer, increasing in volume and density; its sides

and its point more particularly were marked by reddish-purple blotches, and its inferior face covered with vesicles and ulcerations more or less deep and extensive. This condition of the tongue constantly denoted a subacute inflammation of the posterior parts of the mouth, and always betokened a troublesome complication. Many of the sick, pressed by thirst, sought to drink continually; while others refused all kinds of fluids. Lastly, in a small number, tetanic symptoms declared themselves, and gave to the malady a degree of gravity which scarcely permitted us to hope for a cure. A particular feature which has been witnessed by many veterinary surgeons, and which I myself have had occasion to verify, is, that in general the epizooty exercised its ravages much more severely in low localities—particularly those which were damp and situated on the banks of rivers—than in places which were dry and elevated. Not only was the number of sick much greater in the valleys, but there the mortality was more considerable. According to the Messrs. Prévost, the late colds have had the most marked effect in causing the disease to become more general and fatal. In the last fifteen days of March our calculations and those of M. Prévost, senior, fixed the number of deaths among the horses in the Valley of Rouen to be one in every twenty to twenty-five attacked (*Moniteur*, April 2, 1825). Since the 1st of April the stables of the Royal Veterinary College at Alfort had been almost full of sick, and we daily reckoned one or two deaths out of from ten to twelve animals seized. It appeared equally certain that the affected became daily more numerous in Paris, and that the mortality was actually found to be from fifteen to twenty a day, according to the information received from Montfaucon (extensive knackeries) and from veterinary surgeons in the capital.

‘In the districts which are open and exposed, the deaths were extremely rare, and there were cantons where not one fatal case occurred in fifty sick horses. Inspection of the dead demonstrated that the principal lesions resided in the digestive organs; and that the heart, pericardium, omentum, and liver, as well as the lungs, participated more or less,

though in different ways, in the derangements caused by the epizooty. What is more, it was remarked that there was constantly one of these organs most seriously involved, and that this organ always presented appearances as grave as the others were less affected. This last observation, which we have had to make as often as we saw horses opened, explains why it is so difficult, during the progress of the disease, to draw well-founded inductions in order to establish our diagnosis and prognosis. An inflammation more or less intense was constantly noticed in the mucous membrane of the pharynx, but above all in the stomach and intestines ; though in variable degrees and complications. The lateral portions of the tongue were covered with ulcers, similar to aphthæ. The back parts of the mouth were of a more or less intense red, and sometimes perforated by small holes like so many ulcers ; and not unfrequently these follicles were of a considerable size, and their apertures were wide. The surface of the stomach presented a redness more or less intense and extensive, particularly in the right sac ; it was sometimes seen throughout the whole extent of this organ. We had occasion to notice, in various parts of the mucous membrane, ulcerating petechia and gangrenous abrasions. In the majority of examinations, the external surface of the small intestine exhibited on many parts numerous small punctures (*piquetures*) more or less distant from each other. The internal face of the same intestine, always covered with a tenacious thick mucus, was frequently covered with petechial patches. In some cases, the matters enclosed in the small intestine were solid and dried up. The cæcum was nearly always the portion of the intestinal tube in which the mucous membrane was most affected. Not only was the redness the most marked in this part, but it exhibited small ulcers and black effusions like gangrene ; this alteration was continued to the duplicature of the colon, though always less conspicuous. The omentum, red and inflamed, was frequently found torn in many of its involutions. After the digestive tract, the heart was the organ most frequently much involved. The pericardium, whose external surface is commonly infiltrated by a yellow

humour, contained a more or less abundant quantity of serum, at times tinged with blood, and showed traces of intense inflammation. In many subjects the heart was more than double its ordinary volume; its substance, pale and discoloured, offered little consistency and was easily torn; its external surface was inflamed and exhibited petechiæ—the result of ecchymoses or gangrene. The internal cavities always contained very dark blood, which was thick and looked as if coagulated; concretions of an albuminous or fibrinous character were often found. The internal surfaces of this organ presented traces of subacute inflammation; the redness was especially remarkable in the tricuspid and mitral valves, and it extended into all the arterial and venous trunks: but this kind of alteration, when it existed, was not present to the same degree in all the cavities of the heart, nor yet in the vascular conduits; and undoubtedly this goes far to explain the anomalies which were witnessed in the circulatory system during the course of the malady. The liver was sometimes of an extraordinary volume, and its substance pale and without consistence; in some cases its external surface exhibited ecchymoses and recent adhesions—evidently the consequences of inflammation. The lungs were at times simply congested; at others, hepatized in many places, or much inflamed at their borders. In very many instances the kidneys had attained a considerable volume; and their texture, gorged with blood, was easily torn. The bladder, most frequently distended with urine, shared more or less in the inflammation of the other viscera. As a general rule the brain did not show much alteration, and only in one instance have I met with decided inflammation on the external surface of the right lobe of that organ. Notwithstanding this, however, it has always been observed that the spinal canal, about the middle of the dorsal region, had a reddish-coloured serous infiltration in the texture of the meninges. Nothing is known as to the primary causes which have given rise to and developed this malady; we have not sought to decide whether bad forage or atmospheric derangement—such as the constant north winds succeeding the long rains—have had most to do in generating

it ; or whether the cause ought not to be exclusively attributed to faulty hygiene, to the water given to drink, to insalubrious habitations, etc. It is very presumable that some of these agents have exercised a morbid influence on the organization of animals ; and if we bear in mind that in the Lower Seine the epizoöty first appeared in a deep valley, where the air is charged with moisture, and where the hay and other forage was badly harvested this year, we may be convinced that the humidity, the marshy exhalations, and the defective aliment have not been foreign to the development of this prevalent disease. Notwithstanding the information collected from all sides, and the observations made by ourselves and many other veterinary surgeons, we are not in a position to give a definite opinion on so important a question, which, like that pertaining to so many other epizoöties whose history we possess, remains insoluble. The chief point to discuss is whether the causes which gave rise to this affection in the Valley of Fleury have been the same as those which have developed it at Rouen, Gournay, Bolbec, Beauvais, etc. ; or, in other words, if the propagation of the epizoöty ought not to be as much owing to the existence of a contagium as to a peculiar atmospherical constitution, to the use of damaged food, or to any other occult cause? Without pretending to decide on the merits of the question, we may say that the presumptions are in favour of contagion.

‘The only doubt in such a case, although there may be little foundation for it, should urgently indicate the necessity for taking proper measures to arrest the progress of the epizoöty, and to carefully remove the healthy horses from the centres of infection.’¹

M. Durand, veterinary surgeon to the 6th regiment of Dragoons, then in garrison at Haguenau, near Strasburg, reports the epizoöty as having existed among the horses in his charge during the first four months of the year. He

¹ *Girard*. Notice sur la Maladie qui a régné Épizoötiquement sur les Chevaux à Paris. Paris, 1825. Also Beschreibung der gegenwärtig in Frankreich herrschen den Pferdekrankheit, ausdem Französischen mit Anmerkungen von Teuffel. Karlsruhe, 1825.

named it 'inflammatory fever,' and says it was first observed among the remount horses brought from Germany; it afterwards attacked the other horses of the corps. The symptoms which, he says, characterized the malady were, at first: absolute refusal of food—solid or liquid; accelerated movement of the flanks; fits of shivering; small, hard, and quick pulse; eyes dull and lachrymose; the visible mucous membranes of a more or less deep yellow colour, sometimes almost black; frequent yawning; the mouth dry and pasty; urine scanty and oily-looking. The vertebral column rigid; gait staggering; and the walls of the chest and abdomen very sensitive on percussion. About twenty-four hours afterwards, the respiration was more laboured and hurried; a fœtid diarrhœa set in, the anus remaining relaxed; the tongue black; pulse very quick and extremely weak; a dark-coloured glutinous discharge from the nostrils; the expired air had a fœtid and gangrenous odour. The animal gradually became weaker, and expired on the third or fourth day. The cadaveric lesions were: the cerebral viscera covered with black spots, more or less extensive; the lining membrane of the trachea, œsophagus, and stomach very dark-coloured; lungs gangrenous; the viscera in the abdomen marked in places with the same kind of ecchymotic spots as in the cerebrum, and sometimes softened; the liver and kidneys three or four times more voluminous than in health; the lining membrane of the bladder of a deep yellow colour. The bodies of the animals soon after death became greatly swollen, putrefied rapidly, and exhaled an insupportable gangrenous odour.¹

The malady attracted much attention at Paris, from its affecting so many horses simultaneously and with such

¹ *Durand*. Recueil de Méd. Vétér. vol. ii. p. 397. Besides the above writer on this epizooty as it appeared in France, the following are to be particularly noted: *Leblanc*. De la Gastro-Entérite Épizootique, Maladie des Chevaux régnante. Paris, 1828. *Raynard*. Mém. sur l'Épizootie des Chevaux qui a régnée et qui régné encore en France et dans divers autres pays de l'Europe. Lyons, 1825. *Huzard*. Note sur la Maladie Épizootique de Paris. Paris, 1825. Précis de l'Épizootie, ou Fièvre Muqueuse qui régné sur les Chevaux d'un grand nombre de Départements de la France. Nevers, 1825. *Damoiseau*. Rapport sur la Maladie Épizootique régnante. Paris, 1825. *Cosson*. Sur la Gastro-Entéro-Mesenterite. Recueil de Méd. Vétér. vol. ii.

severity, and its pathological anatomy appears to have received more than ordinary attention from distinguished investigators. Among these was Professor Andral, who says: 'In the year 1825 a violent distemper prevailed among the horses at Paris, and in some of the provinces. The most general symptoms were those of gastro-intestinal irritation; but, with very few exceptions, the thoracic viscera were likewise implicated, the breathing being greatly affected, although there was not much cough. During this epidemic, M. Dupuy and I dissected many horses at the slaughter-houses at Montfaucon. The animals were scarcely slaughtered when we proceeded to examine them, and, in many cases, the internal membrane of the heart and aorta presented a bright-red colour. At the same time M. Bouley, junior, one of our most distinguished veterinarians, examined more than fifty horses that had died of the same epidemic. His dissections were always made within from half an hour to three hours after the death of the animal, and in almost every instance he found the internal membrane of the heart and aorta of a bright scarlet or purple colour. On the other hand, MM. Rigot and Trousseau, who likewise opened a great number of horses, state that they never found any appearance of redness in the heart or arteries when the dissection was made shortly after death, but that they always found it when the dissection was deferred for several hours. This difference in the result of our dissections is to be accounted for by the circumstance of our researches having been made at different periods; mine during the year 1825, and theirs in 1828, when the first inflammatory disease had ceased. There is, therefore, nothing extraordinary in the different results that we obtained; and it appears to me that the very circumstance of the redness of the heart and arteries so constantly observed during the first epidemic, and not observed after it had ceased, affords an additional reason for supposing that it was produced by a morbid condition of the part. As to the nature of that morbid condition, I think it highly probable that it was inflammation of the coats of the arteries. These horses during their illness presented decided symptoms of disease in the thoracic viscera; and as no

morbid appearance was found in the lungs, we have nothing to attribute these symptoms to but the affection of the heart and large vessels, characterized: 1st. By the uniform red colour of their internal membrane; 2nd. By a remarkable degree of softening in the muscular structure of the heart; and 3rd. By inflammation of the pericardium, and effusions of different kinds into its cavity. From these facts I conclude that the uniform redness of the internal coats of arteries may, in some cases, be the result of inflammation. In one of the cases recorded by M. Bouillard, the internal membrane in those parts in which it was red, was covered by a thin layer of albuminous matter. This surely is tolerable evidence of the existence of inflammation.¹

The epizoöty showed itself in Italy about the same period as in Sweden and France, and exhibited a more marked preference for the lungs and their serous investment.²

We have seen that it prevailed near Strasburg during the first four months of 1825, but it does not appear to have reached Switzerland until nearly the middle of the year; as it is only in May that it is reported attacking the horses in the Cantons of Bâle, Soleure, Berne, Friburg, and Aargau. Though the reporters believed it to have come from France, yet they do not seem to have considered it contagious.

'In the month of May, 1825, there were reports in the newspapers of an epizoöty among horses in France, and especially in Alsace, which had attracted universal notice; indeed, a friend wrote to me from Belfort, that this disease, which was of a typhoid nervous character (*typhösen nervenfiebers*), was making great progress and killing many horses. According to all reliable accounts, it came from France and Switzerland; passed through most of the cantons, and attacked very large numbers of horses. After having become thoroughly acquainted with its character, the loss sustained from it was trifling.'³ Veterinary Surgeon Anker,

¹ *G. Andral. Hématologie Pathologique.*

² *Toggia. Sulla Peripneumonia Epizoötica manifestatasi sui Cavelli, etc., sul fine di 1824 a Torino. Turin, 1825.*

³ *Ithen. Ansichten einer im Jahre 1825 herrschend gewesenen Pferdseuche. Busch. Zeitschrift, vol. ii. p. 55.*

who described the malady as it appeared in Switzerland, asserts that the lungs and the air-passages in general were most frequently inflamed.¹ It appeared here and there in 1826 and 1827.

In Germany, its outbreak appears to have occurred at the same time as in France and Italy. A Wurtemberg government publication² of the 16th of July, 1825, says: 'In the early part of this year, news has been received, that in the latter months of 1824, a rapidly fatal disease among horses appeared in the northern provinces of France, and extended itself towards the south. From this, as well as from later accounts, it would appear that it is the same as the intercurrent erysipelatous fever ("unterlaufende rothlaufartige krankheit"—febris intercurrentis erysipelatodes) which in the year 1805 established itself in Northern Germany, and which extended itself southwards, when it became known as the "Hanoverian horse-plague." In proportion as it was rapid and insidious at its commencement and in its consequent paralyzing effects, so did it become milder as it travelled from its source (France). It seemed to have no power of infection, but arose spontaneously. The characteristic symptoms of the disease consist in rapidly spreading inflammatory appearances; serous swellings; torpidity of the small intestines, and sanguinary suffusions therein; but without any traces of effused fibrine, the necessary and never-failing constituent of suppuration. In its milder form, the symptoms usually are: loss of appetite, lassitude, the eyes redder than usual, the conjunctival membrane being much suffused with blood; tears flow from the eyes; the heart's action is quickened, and the pulse soft; heaving flanks. The accelerated circulation, which generally does not precede intermittent fever, usually disappears in twenty-four hours; but serous swellings arise in various parts of the body—particularly on the head, hind-quarters, thighs, and about the scrotum, sheath and belly, extending even to the feet. With proper treatment the appetite returns, the

¹ *Anker*. Abhandlung über das 1825 unter den Pferden epizootisch geherrschten Nervenfiebers. Bern, 1826.

² Sammlung. von Wurtemberg. Verordn. p. 48.

lassitude disappears, and in about seven days the animal recovers. This affection is distinguishable from a purely inflammatory disease by the absence of fibrinous exudations, and from the usual yearly erysipelatous fever "*rothlaufartigen jahreskrankheit*"—*febris annua æstivalis erysipelatodes*—apart from its geographical progression—by the rapid course of the fever, as well as the swellings showing themselves in those parts nearest the heart, whence they become diffused, and the serous fluid gravitates towards the feet; whereas in the summer fever, known as splenic apoplexy (*milzbrand*), the tumours form near the pasterns, and, extending upwards, endanger life.'

In the Duchy of Nassau, Franque¹ declares it was present so early as the spring of 1824. After referring to the nervous epizoöty (*nervöse seuche*) which appeared among the horses in Prussia, Pomerania, and the Mark, caused, as he asserts, by the influence of the weather and a combination of other unhealthy circumstances, and which more especially in 1823 spread itself much in Germany, and in 1824-5 in France, he says: 'Whether its spread is attributable to contagion, as the French affirm, there is no reliable evidence to show. Most veterinarians consider it non-infectious, and are rather of opinion that it arose and is maintained by epizoötic influences. The first traces of this nervous epizoöty of horses manifested themselves in the spring and summer of 1824 at Nassau; but not until the summer of 1825 did the cases become most numerous. By the autumn of that year it had disappeared. The greatest number of sick in 1825 was in the neighbourhood of the Lahn, Wiesbaden, and the Taunus. It generally attacked the horses of carriers, post-horses, and those which traders brought from other localities. Among country horses it was rare; and it was neither so general nor so virulent as to render public measures necessary. How many suffered from it is not known; but, according to reports, out of about thirty horses only one died. Of the contagious properties of the malady no certain conclusions could be arrived at; but it was a fact, that if it appeared in a stable, all the horses there

¹ *Franque*. Op. cit. p. 27. *Busch*. Zeitschrift, vol. ii. p. I.

were attacked ; if other horses, however, were brought into the stable at a later period, these usually remained healthy. The disease varied with the age and constitution of the animal. In most horses the greatest weariness and dulness were shown ; in others there were symptoms of great excitability of the brain and nervous system, and great uneasiness and often fury ; so that the owners thought them affected with the staggers or madness. The disease was less serious when swellings formed on the fore and hind legs, on the sheath, and under the belly ; but it was a fatal sign when these appeared upon the head and neck, and became erratic. The following were the most characteristic symptoms which the disease presented in our neighbourhood : a sudden diminution of appetite was the first indication of the horse being affected ; most horses refused their oats at once, while others still ate hay with avidity, and yet a few would begin to eat, and as if in forgetfulness stop and hold the food in their mouth. With most of the sick the thirst was so intense that they could never be satisfied, while others drank nothing at all. Soon after, the horse became dull, hung its head under the manger, drooped its ears, or stood as if asleep, with elevated neck and head, half-shut eyes, and with fore and hind legs drawn close together. Others were uneasy, fidgeted about in the stall, shook their heads, ground their teeth, became frenzied, and after a time subsided into a heavy stupor, in which they were insensible to all external impressions, until after a short period, when they again became restless. Their gait was listless and slow ; they reeled about in their hind-quarters as if paralyzed ; the skin was dry, and the temperature variable—often exceedingly hot and soon after deathly cold. In most cases, tears ran from the eyes at the beginning of the disease ; but in others the eyes were swollen and highly injected. The colour of the interior of the mouth was not always a criterion—now it was pale and filled with a ropy slime ; the tongue, on the contrary, was dry and greyish-yellow ; at other times it was of a purple-red without any saliva, and the tongue of a brownish colour. On the sides and the tip of the tongue there were always noticed purple-

red and yellow spots. The pituitary membrane was pale or red-coloured ; and from the nostrils usually flowed a yellowish fluid. The heart-beats, in the first days of the disease, were generally plainly perceptible—often quicker, but sometimes also slower, than in health ; the pulse could scarcely be felt, and like the heart's action, when the disease was more advanced, it became greatly accelerated and irregular. The fæces were scant at first, but soon became abundant, and a large quantity of slime-covered, dark-green matter was passed. Towards the later stages, diarrhœa was common ; if not too frequent nor too watery and foul-smelling, it indicated convalescence. Nearly all the horses which suffered from this disease had swellings on the limbs, sheath, and belly, or on the neck and head. These were mostly watery, and felt doughy and clammy ; only in a few cases were they very much inflamed and hot. No less various than the symptoms during life, were the appearances to be met with after death ; putridity of the textures showed itself quickly ; the abdomen became greatly distended, and from the nose issued a bloody foam ; under the skin were found in various places—the thighs, shoulders, and neck—yellowish-tinted, acrid accumulations, often streaked with blood, and occasionally also with black inflamed patches. The muscles were flabby and pale like veal ; the substance of the brain was usually healthy, and its bloodvessels very turgid ; the ventricles contained serum. The spinal canal always showed a yellowish-red fluid, and the dura mater was in many cases highly inflamed here and there. In the thoracic cavity there was an accumulation of water : the lungs, in some few horses, were adherent to the pleura costalis and were of a deep red colour, with black streaks, and friable ; in other cases they contained hard hepatized masses, abscesses, or cavities. The heart was much dilated, pale, and soft, with black stains, and full of black thick blood. On the diaphragm and pleuræ were occasionally observed large, dark-red discolorations. But the most characteristic changes were always found in the intestines. These contained a great quantity of reddish-yellow flocculent fluid ; the stomach either contained a mass of half-digested food, or it was quite

empty. Externally, these viscera showed traces of inflammation, though this was sometimes limited to the mucous membrane towards the pylorus, which membrane was often so softened as to be easily removed. The intestines were frequently distended with gas, and the large intestines nearly always exhibited patches of inflammation or gangrene. The spleen was greatly enlarged, softened, and filled with thick, black blood. The liver was usually of a dark-red hue, and so soft as to be readily broken up.'

This epizooty of influenza prevailed extensively in Saxony during this and the succeeding year,¹ and it was still observed in Brandenburg and Pomerania in 1827-8.²

A.D. 1826. Epidemic typhus prevailed in Ireland, and some cases of yellow fever were reported. The winter on the continent of Europe had been very rigorous, and the summer was followed by exceedingly damp weather; heavy rains falling to such an extent that low-lying regions were inundated. Epidemic influenza was extensively prevalent in the north-west countries, and continued during the following year. In Holland it was so severe that the Dutch Government was greatly alarmed, because nearly the whole population was affected. In connection with this epidemic, we may refer to the influenza of horses described for last year.

Vulpine hydrophobia was still prevalent in Germany. Duke Henry, of Wurtemberg, had been making inquiries into its nature, and concluded, from having found in the stomach of the dead foxes wood, earth, stones, leaves, hair, and other substances, that the malady was caused by hunger.³ When, however, the disease was communicated this was not the case. He also supposed that this fox-madness was not contagious until it had reached its extreme stage, and that it might possibly depend upon the corruption of the contents of the gall-bladder, which were known to become more vitiated as

¹ *Brauell*. Über die seit mehrern Jahren in Deutschland unter den Pferden herrschende Épizootie. Weimar, 1825. Also *Dominik*. *Busch*. Zeitschrift, etc. vol. i. p. 106. ² *Dietrichs*. Handbuch d. Special. Pathologie, etc. p. 655.

³ It is quite common to find foreign substances in the stomach of rabid animals, particularly earth and stones, which they swallow when their taste becomes depraved or during the attacks of the disease.

the disease increased, and were thrown into the stomach.¹ In Poland, twenty-three persons were bitten by a mad wolf.²

In Russia and Galicia malignant anthrax was very widespread. In the latter country, Veterinary Surgeon Josephu reports: 'The hot and dry summer had caused splenic apoplexy to spread among the cattle and horses. It was, however, the only epizooty then observed. Several people who were engaged among the sick or dead animals suffered from malignant carbuncle.'³

In Switzerland this malady was also present in the Canton of Aargau. 'According to the hot or cold character of the summer, a greater or less number of cattle are yearly destroyed by this disease; so it was that in September, 1826, it appeared as a most destructive epizooty, for which there was no remedy to be found in the district of Schuffarth. In October many more died, and the attacks were frequent, though many also recovered. Especially was this the case when the blood effused into the rectum and intestines was timeously removed. A young man, a burgher's son, and the blacksmith of the place, were very expert in this business; but they at last became affected with carbuncles on their arms, and had serious fever, from which they suffered for a long time. On taking the cattle up from grass the disease disappeared.'⁴

In the department of the Loire, France, Grogner observed an epizootic fever amongst cattle, which had existed for six years, and was designated a 'fièvre charbonneuse.' It was supposed to have originated in Auvergne, and to be contagious. Sometimes its most prominent symptoms were those of pneumonia; at other times of gastro-enteritis.⁵

During the summer of 1826, and commencement of the autumn of 1827, what was termed an acute entero-peritonitis, but which, from the symptoms and post-mortem appearances described, bears a great resemblance to inflammatory or anthracoid fever, broke out in many communes of the depart-

¹ Bulletin Universel, vol. x. p. 160.

² Hufeland's Journal, vol. lxiii.

³ Oesterreich. Med. Jahrbuch.

⁴ Ithen. Busch. Zeitschrift, vol. iii.

Grogner. Recueil de Méd. Vétér. vol. viii. p. 700.

ment of Nicore, France. It chiefly attacked animals from four to six years old, and which were strong and in good condition. Some had been put in the meadows to fatten, while others were employed in agricultural operations, and probably kept without food during the day, until they were turned into the pasture for the night. Cows, calves, and aged oxen usually escaped. The symptoms were dulness, loss of appetite; those grazing left their companions and retired beneath the hedges; those at work becoming deaf to the voice of the driver, and insensible to the goad. Rumination soon ceased; general lassitude ensued, with peculiar weakness of the posterior limbs and staggering. The respiration was quickened; the temperature of the skin exalted, chiefly towards the shoulders and chest; the back and loins were tender, and the slightest pressure caused shrinking. The head was protruded; the ears and horns, from the base to the point, hot; the conjunctivæ injected, with considerable secretion of tears; the muzzle hot and dry; the mouth hot; the tongue enlarged; the pulse from 70 to 80. The fæces were hard, and covered with a glairy mucus, and that mucus, when the disease had attained its full intensity, streaked with blood. The urine was thick, oily, brown, and had a strong, penetrating odour. The disease was most rapid in its progress, and if the animal was neglected beyond the first day, it was irrevocably lost. The usual duration of the disease was from three to seven days, but some suddenly dropped and died. If early attacked the disease was easily arrested in its progress; but it was necessary to persevere in the use of remedial means. The post-mortem appearances were, in the abdomen: slight inflation of the bowels; three or four buckets of bloody serous fluid effused. Peritoneum universally inflamed, with numerous spots of ecchymosis. The mesentery was likewise singularly spotted. A yellow gelatinous infiltration, mixed with serum, was found about the middle of the diaphragm, and in the whole of the pelvic cavity; the exterior of the bladder was likewise spotted. This viscus contained a little brown urine, and the mucous coat was highly inflamed towards its neck. The liver was

enlarged, inflamed, and easily torn. The bile was thick and flocculent, and had a pungent smell. The large intestines, for a portion of their extent, contained clots of blood, some of which were fibrous; and the mucous coat was thickened, and of a violet colour. The small intestines contained a mucous fluid resembling the lees of port wine, and presented intense inflammation. The rectum was sphacelous throughout its whole extent. All the stomachs were likewise inflamed, and the mucous coat was easily detached from the rumen. In the thorax were found many pounds of fluid, resembling that in the abdomen. The pleura was slightly inflamed, and the lungs emphysematous. The pericardium was distended with fluid, and covered with black spots. The heart showed traces of inflammation, and had ecchymosed patches on its internal surface. The right ventricle contained four ounces of black blood, not coagulated, and small clots floating in it; the other cavities were empty. The principal arterial and venous trunks presented nothing unusual. The mucous coat of the trachea was slightly inflamed at its superior and posterior part, and this inflammation was more intense at the commencement of the bronchial tubes. Neither the brain nor its membranes, nor the spinal cord, presented any extraordinary lesion The causes were supposed to be: keeping the cattle too long in low and wet meadows, abounding with ranunculuses, rushes, and other plants more or less acrid and irritating; and while in the upland pasture, the plants, less nutritive, were dried and withered by the scorching sun, and rendered highly stimulating; the drinking of stagnant and muddy water in the marshes, and the little precaution in getting rid of the carcasses of those which had perished. With regard to its contagiousness, it was believed that it was only so in its third stage, when gangrenous spots appeared on the viscera, and death was inevitable. Even then, contact was necessary; for when the healthy and the diseased were separated by a hedge, the malady was not communicated.¹

Bovine contagious pleuro-pneumonia appears to have been

¹ Recueil de Méd. Vétér. vol. viii.

entirely unknown in the department of the Nord, France, until 1826. According to M. Lecoq, it owed its introduction to the following circumstance. This rich department, in order to have its surplus forage profitably utilized, purchased every year in Franche-Comté numerous droves of cattle, and as the disease was present in that region, these droves carried the deadly contagion from their native mountains. For several years it apparently only affected cattle which were strangers to the department; but the disease gradually spread among the indigenous herds, and is now enzoötic among them. It has occasioned most serious losses.¹

A.D. 1827. Epidemic influenza was yet prevalent in Groningen, Friesland, North Holland, Belgium, and Lower Germany.

Glanders appears to have become unusually frequent in England during this and the preceding year. Mr. Pritchard, of Wolverhampton, states: 'In many cases of acute glanders which came under my observation in 1826 and 1827—a period remarkable for the prevalence of glanders and the destruction of a vast number of horses by it—such were the early manifestations of inflammatory action in the respiratory mucobronchial surfaces, that acute glanders was apparently produced by, or had commenced with, bronchitis.'²

In Colmar, France, an epizoöty of catarrhal ophthalmia appeared among horses, which deserves notice, from the singularly rapid manner in which it spread. Dumalix, army veterinary surgeon, is the reporter. 'In the early days of last June, I was requested by several people in the town and surrounding country to attend their horses, as the eyes of these animals had suddenly become so lachrymose that they thought some one had injured them. About this time, while grooming, many dragoons also complained that their horses' eyes were in the same condition. A careful inspection, however, did not discover any trace of injury; there was nothing but slight palpebral tumefaction and much inflammation of the conjunctiva. I then began to pay more attention to these cases;

¹ Journal de Méd. Vétér. de Lyon, second series, vol. iii. p. 402.

² Pritchard. The Veterinarian, vol. xiii. p. 400.

and the following Saturday, on my usual visit to Colmar, where a hundred and fifty-five horses were on detachment, I found three-fourths of their number suffering from this attack, which, until then, I had looked upon as trifling. I pointed out to the civilians and the dragoons the necessity for frequently bathing the eyes with cold water. But this very simple measure, which in a multitude of similar cases produces good effects, did not in this instance have the desired result. The circumstance was mentioned to the Colonel, who thought it necessary to see these horses himself, and my colleague, M. Philippe, veterinary surgeon 1st class, accompanied him. The result of our inspection was to find all the officers' and troop horses forming the detachment affected in this manner. . . . M. Heitz, department veterinary surgeon, in the course of his practice, had made the same observations. Should we attribute this enzoöty to the great heat which had prevailed in the month of June, when the temperature rose to $25\frac{1}{2}^{\circ}$ (centigrade)? It was the same at Neu-Brisack, distant three leagues from here; four squadrons were stationed at that place, and yet none of the horses had ophthalmia. . . . Nevertheless, and whatever may be the occasional cause of this ophthalmia, it is always correct to assert that it is enzoötic (epizoötic?), as about six hundred horses have been attacked, and of these at least eight have been submitted to very complicated medical treatment, which was not followed by beneficial results for five or six weeks. On the arrival of M. Philippe at Colmar, we joked together at the large number of horses I had to treat; but at five o'clock in the evening, when I went to the stable where his horse stood, to assure myself that his orders about feeding it had been attended to, I observed this animal's left eye shedding tears in great abundance. The day after his arrival at Neu-Brisack, the mare which had been ridden by his dragoon was attacked. What was the origin of this case more particularly?¹

Prinz has described an epizoöty among dogs which commenced in Germany this year, and to which he gave the name of the 'yellow fever of dogs.' It merits attention, when ex-

¹ *Dumalix.* Journal Pratique de Méd. Vétér. vol. iii. p. 22.

amined in connection with the remarkable epizooty of 1761. He writes: 'Before the jaundice in dogs manifested itself, there were observed symptoms of digestive derangement, namely, loss of appetite, vomiting, and diarrhœa, with or without fever; but one could not lay much stress upon these symptoms, as they are often induced by errors in feeding and improper lodging. The gums were swollen, loosened, became red, and were easily bled; or there were yellow, foul-smelling enlargements on them. This malady, however, was not dangerous, and with such simple treatment as a purgative given at the commencement, was easily cured. The year 1828 was remarkable, however, not only for the many diseases of the digestive organs among dogs, but for a far more unusual, and in more than one respect dangerous, affection of the same class. There came to the veterinary hospital at Dresden, from time to time, thirty dogs with the ordinary symptoms of indigestion—ten with vomiting, nine with diarrhœa, six with extraordinary manifestations of this complaint, accompanied by fever; which manifestations were not noticeable among fifty-six young dogs labouring under the malady. Rabies among dogs was also unusually frequent this year, inasmuch as seven mad dogs were sent to the institution. This outbreak was repeated in the two succeeding years.

'The first cases of jaundiced dogs were brought to the hospital in July, 1828, for treatment; in September and November several others were brought; and one other in February, 1829. The number of dogs attacked by this disease and brought to us for treatment only amounted to eight. This, however, must not be taken as the total number affected, for many proprietors of dogs which were ill preferred taking the advice of huntsmen and others. None of the owners could assign any cause for its appearance; and as to this, it may be well worth while to consider the peculiarities of the weather. This, which in the summer of 1827 was unusually hot, was in 1828 remarkable for its humidity—and especially in the months of January, March, June, July, and August. Twenty-eight storms, accompanied by deluges of rain, came from various points and broke over Dresden and

the neighbourhood. In Southern Europe earthquakes were numerous ; the barometer rose and fell rapidly ; the temperature was low. The precursory symptoms of the disease consisted in an appearance of general indisposition ; the dogs lay a great deal, or, when obliged to move, evinced weariness, and hung their heads ; they ate little or nothing, but drank often and with avidity ; after drinking, however, they were easily excited to vomiting, and brought up a whitish-coloured phlegm. Constipation was present, and the fæces when passed were dark, and often blood-coloured ; the urine was a dark, greenish-yellow. On a closer examination of one of these sick dogs, the nose was found to be cold, but rather dry ; a foul smell came from the mouth, the mucous membrane of which was yellow ; the temperature of the body was pretty regular, but rather diminished ; there was loss of condition ; the hair was smooth ; the heart or pulse showed no striking alteration. These symptoms lasted for three or four days, after which they were increased. The yellow colour of the mucous membranes became more intense—and especially was this noticeable under the tongue and the white of the eye, and also where the skin was light-coloured, towards the abdomen ; the inner sides of the thighs and the ears were of a dusky yellow. When standing, diseased animals drew their feet together, and appeared “tucked up ;” many evinced pain on manipulation of the belly ; the appetite was entirely gone, and attempts to eat the smallest quantity of food were followed by severe vomiting of a yellowish-green slime. The thirst increased ; constipation was present, and the fæces were soft, but of a light clay-colour ; the urine was of a dark yellow tint, and was often passed ; the breathing was slow and tranquil ; the breath was of a normal temperature, and there was no noticeable cough. The contractions of the heart were very plainly felt ; the pulse was full, soft, and intermittent, numbering from 83 to 85 per minute. The sick dogs had frequent fits of shivering and slight convulsions, and became quite prostrated. From this period the disease made rapid progress : the smell from the mouth became highly offensive ; the gums became spongy, of a deep red, and were often covered with

yellow spots or ulcers, which latter easily bled; the eyelids were swollen, and were often glued together with a yellow, purulent mucus; the eye became languid and lifeless; the body swayed to and fro, especially in the posterior extremities; the temperature of the body was low. Many of the diseased became unconscious, so that they neither knew their masters nor answered to their name; and they either lay at full length, or, when in motion, knocked against objects. The pulse was then small, weak, and quickened to over 100 a minute; the heart palpitated against the wall of the chest so strongly that its shock could be distinctly perceived. The breathing was of a wheezing nature, in consequence of the accumulation of mucus in the air-passages of the head, which secretion also flowed from the eyelids and the prepuce. In many cases, on the seventh day, a large quantity of dark decomposed blood came away from the nostrils, especially from the right one. The breathing became at last laborious, and death quietly took place from exhaustion on the fifth or seventh day. A long time elapsed before the rigor mortis set in, though the body soon became cold. On removal of the skin, its inner surface was coloured a darkish yellow; the cellular tissue and all the muscular envelopes were of the same hue; the superficial bloodvessels were turgid with blood, and there were frequently observed red spots or patches in the subcutaneous textures. The muscles were of a healthy red colour, and were tolerably supplied with fat. The mouth showed a dusky yellow tinge covered with a dirty-looking mucus, and reddish patches were apparent. The gums were swollen, and separated from the bones. On the inner surface of the lips and the cheeks, under the tongue, and on the palate, were noticed spots which were elevated, of a yellow colour, and which felt tough or friable; when these were removed, a deep cavity was left, which looked as if cut out. In the abdomen, the omentum and epicordis were marbled with petechiæ; the stomach was contracted or collapsed, but not otherwise altered externally; it contained no aliment, but frequently a thick greyish-yellow mucus; the mucous membrane had a dirty yellow appearance, and oftentimes reddish

patches containing extravasated blood. The small intestines likewise contained a similar fluid, and their lining membrane had also many dark-red streaks or patches. The large intestines contained a thick pea-soup coloured mucus, and their longitudinal bands were dark-coloured. The spleen was atrophied, pale, and deficient in blood. In only one animal did it appear larger than usual, and at the same time dark and unevenly congested. The liver was, generally speaking, somewhat larger than usual, and often remarkably enlarged. It was on its upper surface of a dark or reddish-brown, with patches and streaks of a light-yellow colour; its anterior surface had in some cases a thick yellow layer of lymph over it, and by this it contracted adhesions with the posterior surface of the diaphragm. The investing membrane of the liver under the exudation was friable, or covered with red spots; the substance of that organ was often of a natural consistency; at the same time, in those places where the red patches were situated it was friable, and in one instance it was disorganized. The bloodvessels of the liver, as well as those of the whole venæ-portal system, were filled with dark, partially coagulated blood; oftentimes the biliary ducts were distended with ropy bile; but more particularly were the gall-bladders full of a thick, viscid, black, brown, or greenish-coloured bile; this bile had exuded into the textures in the neighbourhood of this receptacle. The texture of the kidneys was of a pale-yellow colour, somewhat softened, and their bloodvessels always contained much blood. The bladder contained but little urine, and in one case it contained coagula of blood; its lining membrane had often petechiæ. The Schneiderian membrane, and that of the larynx and trachea, appeared yellow; the thyroid glands were in some few cases enlarged; the bronchial tubes contained a dark fluid blood, in which floated small clots. The lungs were collapsed, and showed many dark places on their surfaces; the pericardium was of a yellow hue, and had within it a small quantity of yellow fluid. The heart was flabby, spotted within and without by red discolourations; and in its cavities, especially the right one, were dark-red and yellow masses of blood. In the cranium, the dura

mater had a remarkably distinct yellow colour, and the blood-vessels of the pia mater were very full of blood. The brain itself was shrunken and soft. From the vertebral sheath there flowed a yellow fluid, and the membranes of the spinal cord were in a similar condition to those of the brain. The substance of the spinal cord itself had a yellowish appearance, and in the lumbar region was softer than in the other portions.¹

At Calcutta, according to Dr. Marshall, great numbers of dogs died in the streets with choleraic symptoms. At Charcolly also, fifteen-sixteenths of the dogs perished in the same way during a severe visitation of the disease; and, at a later period, half the dogs in Madras died, with vehement vomiting and purging.²

During this and the two following years, there was a great drought and destruction of animals in South America, which to this day is known as the 'gran secco.' All vegetation failed, the brooks were destitute of water, and it has been computed that at Buenos Ayres alone there was a loss of at least a million head of cattle. Multitudes of birds, wild animals, and horses also perished from the want of food and water.³

In the spring of 1827 'epizoötic ekzema' appeared in Reggio, in Italy,⁴ and during this and the following year spread itself over Germany, Switzerland, and France.

In Italy it appears to have been mistaken for glossanthrax (*cancro volante*). At Como and Sondrio, this 'cancro volante' was said to have affected three hundred and ninety-five cattle, but in all probability it was the aphthous disease.⁵

In Bohemia it was prevalent from July, as the following notice informs us:

'Commencing in the month of July, it raged throughout Bohemia until December. It appeared at first in the sandy low-lying plains, and in August spread to the mountainous

¹ *Prinz.* Das Gelbe oder Gallenfieber der Hunde. *Busch.* Zeitschrift, vol. iii. p. 1.

² *Marshall.* British and Foreign Med. Chirurg. Review, April, 1853.

³ *Darwin.* Voyages, vol. iii. p. 155.

⁴ *Bergonzi.* Storia di una Malattia Epidemica, p. 8.

⁵ *Österreich.* Med. Jahrbuch, vol. xi. p. 349.

regions as well as the plains; attacking not only sheep and cattle, but also pigs. Some animals suffered only from the mouth affection; others from the hoof disease; but in most cases they were affected with both, though in these instances one part of the body was attacked before the other. When the feet were involved, it was considered a critical issue to the disease in the mouth. The fact deserves to be here noticed, that at the period when this epizooty raged among cattle, the young people suffered from an inflammatory rheumatic fever, which resolved itself into an aphthous or pustular eruption in the mouth, as well as abscesses and sores on the inferior extremities. The sheep suffered most in this year; for, in addition to the above-mentioned disease, they had variola, scab, rot, and dysentery.

‘The “lung disease” raged in twelve counties and forty-seven districts, nearly the whole year through; out of seven hundred and sixty-four animals attacked, two hundred and thirty-nine died. Splenic apoplexy appeared in ten counties and thirty-seven districts in spring, and more frequently from July to November—simultaneously with the mouth-and-foot disease. In the county of Czaaslauer, it was complicated with angina; out of two hundred and sixty-three animals attacked, only eighty were saved.’¹

Another observation tending to prove the transmissibility of this affection to the human species is noted in Styria for the year 1828.

‘A similar observation I made in the autumn of the year 1828, in the medical district of Voitsberg in Steyermark, where the foot-and-mouth disease raged epizootically among the horned stock of Köflach. At the same period the diseases existing among mankind were catarrh and rheumatism, with and without fever—as well as secondary or consecutive nervous fever following these attacks—intermittent fevers, and among children measles, with inflammatory catarrh and chest affections. Among cattle there reigned sporadically, besides the foot-and-mouth disease, the lung disease at Stallhofen, and in the mountainous districts here

¹ *Nadherny.* Oesterreich. Med. Jahrbuch, vol. xi. p. 83.

and there the splenic apoplexy. While I was in Köflach, I had occasion to treat some grown-up women-servants, two of whom had been attending to the diseased cows, and were now suffering from a catarrhal inflammation of the throat: my attention was drawn to an aphthous eruption on the soft and hard palate, the result, as it appeared, of their attendance upon these diseased animals.¹

The disease prevailed in Bavaria in the summer of 1827, and it also appeared in Wurtemberg, which country it traversed in the autumn from east to west. Kolb has traced its progress very carefully. 'At first, as we know, the evil broke out at Thalhemia, a village in the prefecture of Rottenburg, near the eastern base of the Alps. In the month of August many animals were already affected there. In other neighbouring villages, also, the disease raged, we hear, at the same time; but it is uncertain whether it broke out earlier or later than at Thalhemia. The number of animals affected there was very great, but the intensity of the disease was but little remarkable. Milk, when coagulated, in time yielded very often a large proportion of whey. In many animals lameness succeeded the aphthous eruption; in some a small portion of the hoof sloughed off through ulceration. In the prefecture of Reutlingen the disease at length appeared about the middle of September, and those places were especially affected in which large herds of cattle were brought together, as in the towns of Reutlingen, Pfulligen, Mezingen, and in the lesser villages situated in the free Alps, such as Engstingen, Holzelfingen. There the invasion of the epizooty was so sudden, that there were from eighty to a hundred sick animals before a single day or night had passed. In stables once infected it was very rare for any animal to escape: all others, except calves under six months old, no matter what their age or sex may have been, were liable to an attack; animals, whether grazing or kept up in stalls, were alike obnoxious to it. Aphthæ and lameness attacked many beasts at the same time; the disease in each lasted from five or seven to fourteen days. The malady raged in the city of Reutlingen for three months, during which

¹ *Levitzky.* *Österreich. Med. Jahrbuch*, vol. xiii. p. 611.

period about a third part, two hundred and eighty-five, of the cattle were affected. No measures were proposed by the magistrates to stay the evil. In some Alpine villages an indolent pneumonia (*pneumonia boum lenta—nasse, weisse lungenfäule*) of oxen was much aggravated by this pest; and in the city of Reutlingen, during the course of the summer, the cats in whole streets died from a particular kind of exanthemata, like the 'tinea sicca' of mankind. At this time also, in the prefecture of Reutlingen, in an Alpine town called Münsingen, about the middle of September, the pest of aphtha seized some eighty or ninety cattle out of five hundred. In the town of Hayngen, however, so few as only four or six were affected; a little later, in the village of Oberstetten, out of five hundred, from forty to fifty were seized by it. In these places the more aged ones were affected, and especially cows. Aphthæ became apparent some time after the lameness began. At first those stables remained unaffected the cows of which went to pasture. The milk of the diseased animals was drunk by infants and produced an acid vomiting and diarrhœa. In a village called Weiller, distant from here about six geographical miles, and which was ceded to the prefecture of Rottenburg, the disease prevailed evidently about the same time as in the Alps; nevertheless, only a few cattle were attacked, but these very severely; so much so, indeed, that in a certain cow there were deep ulcers in the tongue, not unlike carcinomatous sores. In the same month in the village of Hirrlingen, of the same prefecture, symptoms of the malady showed themselves. In the prefecture of Tubingen, it at first began in the village of Sickenhausen about the 15th of September, and out of one hundred and sixty cattle it attacked about ninety. At the beginning of the disease there was some suspicion among the peasants that it was contagious, but this was afterwards abandoned when they saw very many animals which stood among the sick remain free from it. Beasts kept in stalls were no less affected than those wandering at large; the evil prevailed for seven weeks. In the village of Nühren, it broke out about the 20th of September; the aphthæ pre-

ceded the lameness, and pustules appeared here and there on the udder. Among four hundred head only about a fourth remained unaffected ; it prevailed for five weeks. At the same time the disease invaded Mössingam, belonging to the prefecture of Rottenburg, but it was accompanied by different phenomena—the aphthæ for the most part preceding the other symptoms, but sometimes they were not at all apparent, so that lameness alone was present, though this again did not in many instances follow the eruption ; pustules on the udders were very frequent. Out of one thousand two hundred cattle more than six hundred were affected. Amongst the sheep also, during the month of July, lameness was prevalent at Mössingen. At Ofterdinga, a place included in the prefecture of Rottenburg, a little before this time we heard that the disease was increasing. At Lustnavia, near Tübingen, this pest first appeared in the cow-shed of the chief magistrate, and attacked the whole nine cattle which stood therein. Lameness appearing, the animals began to give less milk, so that a cow recently yielding her full quantity, now gave less than two pounds a day. Not only was this milk easily coagulated when drawn, but it was often obtained in a coagulated state from the very teats. Some animals stood in stables in the midst of those severely affected, and yet they remained unscathed ; pustules often formed on the udders. Out of six hundred beasts four hundred were seized with the disorder. On the 27th of September, a veterinary surgeon of Tübingen, named Belthlen, instituted an inquiry in the village of Rommelsbach, and he found eight cattle suffering from aphthæ with lameness ; on the same day there was an invasion of the malady announced by the chief magistrate at the village of Kirchentellinsfurth. The epizooty ended in five weeks, and it attacked about the third part—two hundred and fifty—of the cattle therein. The disease broke out in Dusslinga about the middle of September, and increased in intensity until about the middle of December, when out of one thousand one hundred cattle it seized two hundred in a benignant form. At Degerschlachti, from the 28th of September to the 6th of December, eighty-seven animals were infected out of one

hundred and forty-nine, and here the disease was thought to be contagious. What gave them reason to think it was so, arose from the fact that the animals at pasture were first attacked when grazing with those from Kirchentellinsfurth, and that these latter were then affected. At Waldorf, in the middle of October, only nineteen beasts were affected, and these did not suffer for more than ten or twelve days. In the neighbouring village of Gnibel, about this time, six or eight cattle were contaminated. At Pfrondorf, from the middle of October up to the 24th of November, forty or fifty out of four hundred were affected. In the city of Tubingen, the disease reigned from the middle of October, and about three hundred out of eight hundred and sixty-five were ill. At Altenburg, from the beginning of November, increasing up to the beginning of December, from twelve to fifteen cattle were sick out of one hundred and twenty. Many animals near the sick remained healthy; though the contagious saliva was flowing from the mouths of the former, yet these were unaffected. In the village of Ofterdingen, the malady was wonderfully mild; about the beginning of November each animal suffered only three or four days, and out of two hundred, twenty or thirty were affected. From the city of Rottenburg, Veterinary Surgeon Kienzle informs us that the disease disappeared in the month of December.¹

In the summer of 1828 it prevailed in Wertemburg.² In the Duchy of Nassau it manifested itself in the districts of Weilbourg, Herborn, Reichelsheim, and Weisbaden.³ At Geneva it was observed sometime in the course of the year 1828.⁴ Wirth, I find, states that it was glossanthrax that prevailed in Switzerland.

In the North of Germany it appears to have been most frequent in 1828, and in Altenburg to have shown itself in the autumn of this year.⁵

Ovine small-pox was very destructive in Saxony.⁶

¹ *Koll.* Aphtharum Pecorinarum Historia succincta, etc. Tubingen, 1828.

² *Sammlung v. Verordn.* p. 73.

³ *Franque.* Op. cit. p. 201.

⁴ *Recueil. de Méd. Vétér.* vol. xv. p. 653.

⁵ *Pohls.* Beitrage z. d. Landwehr. vol. v. pp. 318, 339.

⁶ *Heusinger.* Op. cit. p. 330.

The contagious pleuro-pneumonia of cattle again appeared in Paris and its neighbourhood. Delafond, in a report on this malady some years after this period, observes: 'It is well known that this disease has been domiciled for a long time in the cow-sheds of Paris. Since 1827, pleuro-pneumonia has prevailed continuously in the vicinity of Paris, and for the last ten years has inflicted much damage on the grazing herds. Many cattle-owners have had the misfortune to lose three-fourths of their stock when this scourge appeared.'¹

During the ten years subsequent to 1827, the disease had extended to and fixed itself in the districts of Merv, Noailles, Beauvais, Abbeville, Arras, Amiens, and Lille. From the year 1831 the malady was particularly well known in France.

In this year the Cattle Plague appeared in Southern Russia, during the war between Russia and Turkey, and prevailed during 1828, 1829, 1830. In October, 1827, it was carried into Courland, where it caused grievous loss.² In November it was also imported into Silesia from Podolia, and extended into Galicia, Cracovia, and the adjoining regions, where the damage inflicted was very considerable.³ In 1828 it showed itself in Moravia and Bohemia, and had scarcely been promptly extinguished there, when it was again introduced in September, 1829.⁴ Consul-General Green, in a report to the British Government in 1865, writes: 'Persons with whom I have conversed on the subject state that the rinderpest or Cattle Disease was first introduced into the Danubian Principalities in 1828 by the Russian army, which was accompanied by thousands of carts drawn by oxen.' Ubicini, in his 'History of the Principalities,' thus alludes to the subject: 'Puis vint le terrible hiver de 1829, pendant lequel le manque de fourrages, joint à une épizootie, enleva plus de la moitié du bétail; alors en se servit des paysans, comme des bêtes de somme, pour le service de l'armée.'

¹ *Delafond*. Traité sur la Maladie de Poitrine du Gros Bétail. Paris, 1844. *Fuchs*. Frage über die Contagiosität der Lungenseuche, p. 107.

² *Bidder*. *Henke*, Zeitschrift für Staatsarzneik. vol. xii. p. 232.

³ *Lorinser*. Untersuchungen über die Rinderpest. Berlin, 1831, p. 253. *Jessen*. Die Rinderpest mit Besonderer Beziehung auf Russland dargestellt. Berlin, 1834.

⁴ *Prinz*. Rinderpest in Böhmen. *Busch*. Zeitschrift, vol. iii. p. 15.

The origin, spread, and disasters accompanying this outbreak of the fearful malady, are sufficiently interesting to merit notice. The wars in Europe and Asiatic Turkey were carried on with such vigour, that the call on the people in Western Russia and the Danubian Principalities for labour and provisions exhausted all internal resources, and was a fruitful source of disease both in man and beast. The repeated invasions of Turkey led to extensive demands for cattle in the Principalities. The Russians had, however, passed the Pruth; General Geizmar reached Aluta, and his Cossacks had penetrated Little Wallachia without opposition. As a consequence, the Sultan obtained only 500 head of cattle and 3,000 sheep from Wallachia, whereas Moldavia yielded nothing. 'The Russian declaration of war, however, was accompanied by a demand for 250,000 loads of corn, 400,000 tons of hay, 50,000 barrels of brandy, and 23,000 oxen, in addition to the forced labour of 16,000 peasants, who were to be employed in making hay on the banks of the Danube. The loss occasioned by the payment for these requisitions in bills, instead of cash, was not the only disadvantage to which the unfortunate people were immediately exposed; for, as the local supplies were soon exhausted by such an army, it became necessary to transport provisions from Bessarabia by means of forced labour. The peasants also soon exhausted their own supplies, and were reduced to such extreme want in consequence that they died in great numbers on the road; as did also their cattle, in consequence of a murrain. The serious extent of this disease covered the road with carcasses, which by their putrefaction, coupled with the want of cleanliness in the Russian soldier gave rise to typhus fever in its very worst form—that of the Plague. This fearful scourge first appeared at Bucharest; and it continued to afflict the Russian army, as well as the inhabitants, during the whole of this and the succeeding campaign.'¹ Bessarabia, Wallachia, and Moldavia were not the only provinces over which the Cattle Plague extended and produced such terrible disasters, but it again found its way into Podolia and Volhynia, and thence to Prussia, Saxony, Hungary, and Austria.

¹ *Colonel Chesney. The Russo-Turkish Campaigns. London, 1854, p. 72.*

The losses continued great for some time, notwithstanding all efforts to check the disease; and in 1830 it appeared in several parts of the Austrian territory, especially in Illyria. 'For three years, from 1828 to 1830, Southern Russia suffered much from rinderpest, and it continued to break out here and there in the Steppes and adjoining districts; but so long as the indigenous cattle only were affected, deaths were comparatively rare; so soon, however, as the herds of Austrian cattle, belonging to German colonists, were attacked, not even ten per cent. survived. At all times the German colonists suffer from this scourge; their cattle are infected by the herds employed to carry salt from the Crimea and the Steppes of saline base between the Caspian and the Baltic, which are supposed to have once formed a bottom for the waters when these two seas were united. The German colonies which thus suffer are in Moloshna and in the vicinity of Mariopol. It is said that in these colonies the neat cottages and the well-built barns and outhouses, surrounded by trees and gardens and by highly cultivated fields, bear the signs of wealth and comfort, and of the care bestowed on them by an industrious population. The German colonies form a striking contrast to the dreary country in which they are situated, and to the miserable Russian villages, and the still more wretched Tartar douls around them. Their situation is always well chosen on some sloping ground, on the border of one of the few rivulets that water the country.¹ 'My object in referring to these features of the German colonies is to point out the interesting fact that, although surrounded by Steppe-land, the colonists and their cattle exist under very different conditions to those common to the habitations and the herds of the Cossacks, the Tartars, and the Calmucks; and although the cattle of the Steppes, accustomed to hard living, withstand the Steppe murrain, it is no special breed that presents this immunity from disease, but animals in general reared in the most primitive manner, and somehow rendered constitutionally able to ward off all injurious influences.'²

¹ *H. D. Seymour, M.P.* Russia on the Black Sea and Sea of Azoff. London, 1855.

² *J. Gamgee.* The Cattle Plague. London, 1866.

‘In 1829 an immense number of bullocks was accumulated beyond the Pruth, for the use of the Russian army against Turkey. Being greatly distressed for want of food, and exhausted by fatigue and exposure, the Cattle Plague broke out in August, and continued till nearly the approach of the following summer. The mortality was fearful. In the Principalities, during the autumn alone, more than 200,000 head of cattle perished. The entire stocks in Bessarabia were destroyed; and the provinces northwards became infected, and suffered enormous losses.’¹

A.D. 1828. An epidemic fever was very fatal at Gibraltar. By some it was supposed to have been imported, and by others to have arisen from want of sanitary attention. Swarms of flies were generated, and their incredible myriads covered the walls of houses like black curtains; and while the pestilence raged, parrots, canaries, and other small birds in cages, and even poultry and domestic animals, perished in great numbers. Those people who recovered were found to be swarming with vermin.²

In the spring, epizootic catarrhal fever, or ‘influenza,’ was prevalent among horses in England. In the London districts, where it was very common and fatal, it bore a somewhat different character to what was observed of it in the provinces, and the curative treatment was consequently modified. Mr. Brown, who saw much of the disease at Melton Mowbray, says that ‘the pulse was generally small and frequent; a difficult and sonorous breathing; an offensive smell; a troublesome and almost incessant cough; great difficulty in swallowing; the Schneiderian membrane highly injected, with an inordinate discharge of viscid acrimonious mucus; great enlargement of the submaxillary and parotid glands, with frequent ulceration; considerable debility; loss of appetite; tremors; great irritability, with a disinclination to move. In some cases the fæces were buttony, voided in small quantities, and covered with mucus; in others there was diarrhœa, with a peculiar offensive smell. In a few instances the pulse was

¹ Quarterly Journal of Agriculture, October, 1845.

² *A. Neale*. Op. cit. pp. 175, 244.

slow and small, the eyes overflowing with tears; the Schneiderian membrane inflamed, yet assuming a yellow tint, and discharging an immense quantity of viscid mucus; breathing less difficult and sonorous; very lethargic and partial loss of voluntary motion.' The disease, under depletive treatment, was very fatal; but when the sick animals were nursed and subjected to the opposite *régime*, it appears to have been rarely so. On examination after death, 'the Schneiderian membrane was found to be in the highest state of mortification, with several ulcers on its surface; a large abscess in the pharynx, full of the most offensive matter. The membrane lining the pharynx, larynx, trachea, bronchiæ, and air-cells had the same morbid appearance. The substance of the lungs was not in that high state of mortification which is often met with after active inflammation, but contained several abscesses. The pleuræ were much inflamed, and the cavity of the chest filled with a mixture of serum and pus having a very putrid odour. It attacked all ages, whether in the stable or at grass, in elevated or low situations, or drinking from stagnant pools or fresh water.¹

The editor of the fifth edition of 'Osmer's Treatise on Horses' (Mr. Hinds) remarks: 'In the spring of 1828, the *catarrhal* epidemic prevailed generally, with symptoms nearly resembling the third and fourth classes of Osmer; but in London, the attacks partook of the whole of those described in his text.²

In the Austrian States, the influenza which we have already noticed as prevailing on the Continent until 1828, yet appeared here and there. Even so late as 1829, it broke out in the military stud at Mezöhegyes.³

In Argyleshire, Scotland, anthrax fever killed a great many sheep, and prevailed for a long time during this year.⁴

The contagious pleuro-pneumonia of cattle appears to have been introduced into Belgium about this time. 'Since 1828, there has existed in Belgium an epizootic disease that came to us from the south of Europe, where it had existed for a

¹ *Brown.* The Veterinarian, vol. i. p. 286.

² *Wirth.* Op. cit. p. 157.

³ *Hinds.* Op. cit. p. 104.

⁴ The Farmer's Magazine, 1828.

very long time. Different names have been given to it; but it is now well known to all who attend to such matters by the name of "exudative pleuro-pneumonia"—a correct designation applied to it by a learned Belgian professor, M. Gluge.¹ But in a communication from the late Inspector of Belgian Cavalry, Verheyen, we find that this insidious plague was imported into Belgium so early as 1827, and proved a dreadful infliction on the Belgian farmers, travelling from place to place, until the whole of Flanders was invaded by it.² It has been remarked that no country ever suffered so much from this malady as Holland. It received the infection in 1827—before the separation between it and Belgium—in the, at that period, southern provinces of the kingdom, particularly in Brussels, Mechlin, Louvain, and Diest. At a later date it showed itself in Hainault and West Flanders; and in the year 1833 it appeared in all its malignity, in what we now call Holland. In that year it broke out on a farm in Guelderland, and from this centre it spread over the whole country.

A.D. 1829. A blight or disease made its appearance in the potato and other crops in Germany, Ireland, and America.³ In the preceding and following years, the oak caterpillars (*bombyx processionæ*) caused great damage in Westphalia,⁴ and in Upper Hesse.

In Scotland great floods occurred, and the east coast was greatly devastated. In Morayshire, the shore was strewn with the carcasses of domestic animals, and with millions of dead hares and rabbits, particularly at the mouth of the river Spey.⁵

The autumn of 1829 was comparatively mild, but towards the winter it became exceedingly wet, with a cold east wind blowing, and this unfavourable weather continued for a long time. An apparent complication of various diseases, which collectively were termed 'rot' (*cachexia aquosa*), attacked the

¹ Willems. Mém. sur le Epizootie de Peripneumonie du Bétail.

² Fuchs. Op. cit. p. 124. Wirth. Op. cit. p. 300.

³ Bascome. Op. cit. p. 158. ⁴ Nicolai. Die Processions-raupe, Berlin, 1833.

⁵ Sir T. D. Lauder. The Floods in Morayshire, 1829. For very interesting remarks on the destructiveness of floods and accompanying phenomena, see Humboldt. Personal Narrative. Also Bates. The Naturalist on the Amazons.

ovine and bovine species over the whole of Europe, and caused tremendous loss, more especially in Egypt, Northern France, Eastern Germany, Holland, and England.

In Egypt, though its ravages are very great every year after the subsidence of the Nile, it seems to have been extraordinarily wide-spread and fatal. 'It appears every year in Egypt after the fall of the Nile, and it follows and keeps pace with the subsidence of the waters. In the higher districts of Upper Egypt, it commences about the end of July ; nearer Cairo, in August ; in the environs of the capital, in October and November ; and during the months of December, January, and February, in the Delta. It is most obstinate, and continues longest in the neighbourhood of the confluence of the waters ; in lower Egypt it lasts about one hundred and twenty or one hundred and thirty days, and it disappears soonest and is least fatal when the rise of the Nile has not been considerable. Desolation and death accompany it wherever it passes. The Arabs say this pest annually destroys sixteen thousand sheep in Egypt. Its victims usually perish on the twenty-fifth, thirty-fifth, or fortieth day after the apparent attack If an Arab shepherd is asked how he distinguishes this disease from all others, he replies that the sheep have under the jaw a bag full of water ; that they walk with difficulty ; have diarrhœa ; their wool falls off ; they are dull, disinclined to move, and are almost constantly lying down ; sometimes a fœtid matter of a variable colour—yellow, grey, or green—runs from the nostrils. The head and neck and belly and limbs swell ; the eyes are red ; the animals become emaciated ; they eat and drink little when the disease is in an advanced state, but rumination continues for a considerable period It is observed in Egypt in the sheep, rabbit, hare ; in poultry, and sometimes in the horse, mule, ox, dog, and even the silk-worm. It is always dangerous, and is generally enzoötic or epizoötic . . . In the Delta the rot (*pourriture*) lasts longest. This part of Egypt lies very low ; it is cut in every direction by innumerable canals ; the waters are out a longer time, and there is more marshy ground. The very habitations of the

Arabs are in the water ; rushes are the only food for their flocks during three or four months ; the sheep pasture in the midst of the mud, or on the borders of the marshes and canals ; the malady follows their every step, and thousands of them perish . . . In 1829, one of us, by order of the Viceroy, visited many of the provinces of the Delta, to oppose, if possible, some barrier to the scourge which decimated the flocks—so indispensable to the tyrant as well as the slave. The inhabitants laughed at the advice which we gave them as to the management of their sheep. “Before we concern ourselves,” said they, “with the preservation of the health of the oxen and sheep, we must demand the means of our own existence, which are now refused to us.” Dr. Pariset and one of us were resting in the house of the chief of one of the villages, and were talking with him about this pest, the presumed cause of it, and the possibility of effecting its utter disappearance from Egypt. Our host laughed, and said, “This pest has always raged in our villages, *and it would not be wise to get rid of it* ; let our families be comfortably lodged, and let them have wholesome and proper food, and not only this pest, but many others will disappear from our country.”¹

In the department of the Meuse, in France, and in other districts in this portion of that country, its dreadful destructiveness was commented upon by many observers. One of these says : ‘ Out of eighty-five thousand cattle estimated as present in the arrondissement of Montmédy (Meuse) in 1830, the *cachexie* has killed five thousand. The loss has been more considerable in the arrondissement of Verdun, where, out of twenty thousand six hundred and eighty-two head, two thousand two hundred and one succumbed. The mortality has been most considerable among young animals, and towards the decline of the malady, among cows and oxen. It nearly always commenced with the calves ; then it attacked the weakest cows, and especially if they were in calf ; and lastly, the oxen. It made the greatest havoc in these departments in December, 1829, and January, February,

¹ Hamont and Fischer. Journal de Méd. Vétér.

March and April, 1830. The mortality commenced about the 15th of December, and ceased about the 20th of April; from the 15th of January to the 15th of March it destroyed the greatest number of animals.’¹

For the Duchy of Nassau there is a similar account. ‘In the year 1829, the first district of the land (Westerwald) was visited by this disease to such a degree, that from the autumn till the spring of 1830, in the two parishes of Marienberg and Rennerod alone, more than eleven hundred head of cattle, principally young stock, died. The summer of 1828 was notoriously unfavourable, and it is certain that it predisposed to the malady, which the humidity of 1829 at last developed. In the low-lying parishes of Westerwald, in the neighbourhood of the Lahn and the Taunus, only animals here and there were attacked. Here, on the contrary, it had already appeared in the autumn of 1828, and in many places, especially during 1829 and 1830, it killed great numbers.’² In the Lower Rhine provinces and in Holland its ravages were very severe, and are described as follows: ‘The month of May in 1829 was remarkably cold and dry, and we could not congratulate ourselves upon a single growing day for the crops. In June, the cold was varied with occasional hot gleams of sunshine, which was yet unfavourable for all vegetation, and hence it was that grass was extremely scarce. On the 20th of the same month it rained, and continued doing so for two months; so that until the end of August the sky was overcast. From these circumstances the ground was thoroughly saturated with water, and the low-lying pastures were flooded. The hay harvest was, therefore, in a great measure spoiled, and what remained in the meadows was destroyed; so that the fattening stock lost their condition, and the milch-cows became dry and could scarcely exist. The autumn still brought a continuous rain, and the cattle were still forced to go about cold and wet, without being able to lie down. The limbs, to the depth they were immersed in the waters, lost their hair; the bones were also attacked, and,

¹ *Hurtrel d'Arboval*. Dict. de Méd. etc. Vétér. vol. i. p. 265.

² *Franque*. Seuchen der Hausthiere.

in short, the cattle were in a most miserable condition. In this state they were taken to their sheds, and there being but little reserve forage for them, it was not long before disease broke out in a severe form, and caused a frightful devastation. It cannot be denied that the farmers who lived in the low-lands of the Rhine, and without the dam, had saved an excellent hay harvest, inasmuch as they kept their cattle healthy and in good condition, owing, undoubtedly, to the fact, that notwithstanding all the storms of rain, the Rhine fortunately did not overflow its banks; and thus considerable tracts of pasture on both sides of the river were free from inundations From this combination of circumstances it is that in this region but little disease occurred. But when we consider that in the township of Haldern and Ringenberg twelve hundred head of cattle alone died, we may well call this disease a true plague. In Holland, the position of the inhabitants of the low country was still more worthy of commiseration; the plague was there even far more virulent than in this neighbourhood; for I know, on good authority, that in one village—Vinkeveen—over fifteen hundred head of stock died. Still greater was the number of cattle lost in the villages of Benschop and Polsbroeck, and as considerable was it in the other low-lying places. These unfortunate people's chief means of obtaining a livelihood being dependent on their cattle, they were obliged to witness their destruction without any hope of saving them, for the beautiful meadows lay there like a great inland sea. Several thousand acres of land and pasture lay deeper under water than the shoal banks of the sea, and were surrounded by banks of turf. The rain-water, when it did not increase too fast, was pumped away by windmills. As, however, the wind failed, this remedy also failed; and here I must remark that it appeared strange to me at first, that the cows on the brackish pasture near the shore remained nearly all healthy. It is, however, known that most of these pastures are intersected by canals which contain salt water; if, then, the animals had a proper amount of nourishment in their stables, the lost strength would soon be regained, and they would not

die in such large numbers, as, on the contrary, was the consequence of the damaging of the herbage in this neighbourhood and the loss of strength and condition. The year 1830 brought an extraordinary fine spring, and the great desire of the farmers to drive their cattle to pasture was much favoured thereby. However, the new grass acting as an irritant and a purgative, caused profuse diarrhœa, from which the cattle suffered much, and caused the prostration of many, even in the fine healthy month of May. It was also necessary to keep the cattle up at night, to give them dry fodder and the medicines needful to enable them to regain their strength. I must now be allowed to point out, shortly, that this bad weather exercised an evil influence not only upon cattle, but also upon horses and sheep. As an instance of this, in the above-named townships at least twenty larger or smaller flocks of sheep became a prey to the malady.¹

In England, where the malady did not appear until 1830, and lasted till 1831, it was regarded as a national calamity, as it was estimated that not less than two million sheep perished.² 'Perhaps the greatest outbreak that ever occurred in England, or at any rate the one respecting which we have the most authentic information, is that which took place in 1830, in which it was supposed that we lost not fewer than two millions of sheep; and the result was that an inquiry then going on in the House of Commons with regard to the depressing causes of agriculture, branched out into an investigation of those losses. I believe the Government fully ascertained that in the following year the weekly supply of sheep to our metropolitan markets was diminished by five thousand—a circumstance that will help to show us to what an extent we have suffered in this country when these great outbreaks have taken place.'³ Even two years afterwards, there were twenty thousand less sheep than the ordinary average at Weyhill Fair.⁴

¹ *Achthoven*. *Über die Rindviehkrankheit des Jahres 1830 am Niederrhein*. Emmerich, 1832. See also *Monteton*. *Über die zwei wichtigsten Lämmerkrankheiten*. Potsdam, 1833.

² Library of Useful Knowledge.

³ *J. B. Simonds*. *The Veterinarian*, vol. xxxiv. p. 276.

⁴ *Armatage*. *Clater's Cattle Doctor*, p. 519.

During a violent epidemy at the Brazils, consequent on a long drought, which transformed the bay of Rio de Janeiro and the low-lying swamps into immense marshes, great numbers of animals died. 'On avait observe que les animaux succombaient en nombre dans les campagnes, et que presque tous restaient, sans être ensevelis, au milieu des marais, où ils étaient venus puiser une eau sale, rare et presque tarie.'¹

From 1828 to 1830, rabies canina was very frequent in Saxony.

In 1829, M. Dupuy observed an epizooty among ducks near Toulouse, France. The cause could not be ascertained. Disease of the intestines was observed on examination after death. 'There were noticed layers and zones of a red colour, similar to that of bricks, to the extent of three inches. These zones were four in number; the first was situated about a foot from the gizzard. The small intestines in this part showed an alteration which bore a close resemblance to the principal symptom observed in the skin disease termed "shingles" (*zona*). The other three zones offered the same characters, being from one to two inches in width, projected in the same manner; they were extended over the remaining portion of intestine. In the spaces between these zones, the mucous membrane formed ridges which were disposed in circular rings of a red colour; these ridges or duplicatures were narrow and thin, and the grooves or spaces between were close together, resembling what is noticed on the bark of certain umbelliferous plants.'²

In Nassau, parturition was difficult, and oftentimes fatal in cows. 'In the latter part of the autumn of 1829, and more particularly in the commencement of 1830, abortions and cases of difficult parturition were observed in many places, and they were far more frequent than in former years. The cause, in all probability, resided not only in the debilitating influence of the damp cold weather of 1829, but also in the faulty state of the forage, which was nearly all spoiled in making. The result of these unfavourable conditions was

¹ *Sigaud.* Les Maladies de Brazil, p. 171.

² *Dupuy.* Journal Pratique des Sciences Zoöatriques, 1836.

the disturbance and relaxation of the reproductive energies ; and in those animals which were not really diseased, there was, nevertheless, a languor and debility of the muscular system, and even the bones themselves appeared to be friable and easily broken ; such, indeed, was proved to be the case in several animals which were examined. The extreme atony of the muscular system was more particularly noticed in cows which were near their time for calving, though they might otherwise be healthy ; many towards the last weeks were unable to stand, and had to be assisted to rise. They lay helpless for three or four weeks, until at last they calved and were relieved. Others died before calving ; some while calving, or soon after that event. The calves were always full grown, healthy, and lively—a striking proof of how much the natural energy is directed towards the maintenance of the young, even at the expense of the mother. In several cows which died during calving, or were killed in consequence of their inability to calve, the bones of the pelvis were found fractured. How these fractures occurred could not be ascertained, but they were probably due to the cattle falling down when, in consequence of their great weakness, they could no longer stand.’¹

These peculiar fractures were, I think, in all likelihood owing to the presence of that diseased brittle condition of the bones designated ‘cachexia ossifraga,’ which appears to have been epizootic at this time ; as Wirth² informs us it made its appearance in the spring of the year in the east of Switzerland, after a cold winter.

In Germany, this fragility of the bones of cattle, and particularly of breeding or dairy cattle, would appear to be somewhat common, if we may judge by its being so frequently mentioned in the veterinary records of that country, where it is popularly known as the ‘Knochenbrechigkeit.’ In France it would seem to be rare, for it is scarcely alluded to. Its frequency in Alsace—the border-land between France and Germany—is, however, attested by M. Zundel,³ who design-

¹ *Franque. Busch. Zeitschrift*, vol. ii. p. 101.

² *Wirth. Op. cit.* p. 447.

³ *Zundel. Recueil de Méd. Vétér.*, fifth series, vol. vii. p. 561.

nates the disease 'Osteoclastie.' It is a chronic disease, somewhat cachectic in its nature, unaccompanied by fever, and particularly characterized by incomplete nutrition of the osseous system; the bones becoming lighter, less compact, and very brittle; at the same time there is most frequently observed general emaciation, or the morbid condition known as 'pica.' In Alsace it is only observed in a special region—the Rhenish portion of the plain, or *basse plaine*, as it is termed. It prevails most extensively in years remarkable for drought, when the vegetation is largely deprived of its mineral constituents, particularly those that are most insoluble—such as the phosphate of lime—which are then not dissolved in sufficient quantity for the normal nutrition of plants.

The malady attacks bovine animals, goats, pigs, and even birds, but it has not yet been observed in sheep.

The Cattle Plague appeared in Bessarabia, Moldavia, and Hungary.

CHAPTER III.

PERIOD FROM A.D. 1830 TO 1835.

A.D. 1830. Malignant cholera showed itself on the frontiers of Europe, towards the borders of the Black Sea, and spreading, passed into the centre of European Russia; while from the Georgian frontier of Persia it extended into the very middle of the Russian Empire, and travelling westward, swept away hundreds of thousands of people in its course.¹

¹ The entrance of the epidemy into Orenburg took place on the 26th of August, 1829, and its approach to Moscow seems to have been heralded by some strange phenomena, described as follows: 'During the summer of 1830, the Tartars, who frequent Moscow for purposes of traffic, predicted the approach of a pestiferous malady, which, however, the inhabitants, relying upon the local advantages of their city, would not credit. *Suddenly, however, the atmosphere was filled with dense masses of small green flies, which in Asia are the forerunners of pestilence, and are called "plague-flies."* The streets swarmed with these insects, and as soon as the inhabitants quitted their houses they were covered from head to foot. For a time, however, no attention was paid to this phenomenon, nor were any preventive measures against the cholera even thought of until intelligence arrived that this formidable disease had appeared in Nischni-Novgorod.'—The Englishman's Magazine, No. 2.

Dr. Reimona, of St. Petersburg, in a letter to Dr. Marc, communicated to the Academy of Medicine at Paris, states, 'that the cholera was brought to Astracan by ships, and spread itself over Russia by the emigration of the inhabitants, principally those of the lower orders. This is the sole cause of its propagation in Russia; it has never shown itself in any place, except where it has been brought by travellers who came from infected places. We have not a single instance of a town or village which without communication with houses or persons affected has contracted the disorder. Several places surrounded by the disease have preserved themselves from it by a rigid insulation. It is a contagion *sui generis*, which we must not assimilate with the plague, and which will be more or less rapid, more or less extensive, according to the more or less wholesome nature of localities; it has been more dangerous to the Jews, who live shut up in small rooms and in extreme filth.'—*A. Neale*. Op. cit. p. 198.

In the winter and spring multitudes of young cattle died in Britain from filaria in the bronchiæ.¹

Epizootic affections, either preceding or accompanying the cholera in man, were reported by a large number of observers, and from many of the accounts these diseases appear to have borne some resemblance to that dreadful epidemic. Professor Dick, of Edinburgh, in an admirable essay on 'Cholera in the Domesticated Animals,'¹ writes: 'Early in 1830, an epizootic disease commenced, by which, for some weeks, several horses in Edinburgh and its neighbourhood were affected; but until the beginning of June it had not become very serious. During the latter part of that month, and throughout the two following ones, however, it became more formidable, and a great number of horses were seized with this affection. The disease appeared to consist in an inflammation of the mucous membrane of the organs of respiration; the pulse rose to a range of from sixty to ninety, according to the severity of the attack; there was slight soreness of the throat, weak cough, breathing quickened; the animal heavy, with great weakness, and that rapidly ensuing; *bowels easily acted upon*; surface of the body natural in temperature, but with a more than ordinary tendency to become cold in the extremities. The disease was, however, by no means fatal, so that in one establishment, out of thirty-two horses seized with this disease only four died; and other proprietors were at that time equally fortunate. . . . By a reference to my case-book, I find that it commenced again about the end of October, and increased in severity throughout the months of December, January, and February, during which time upwards of one hundred and fifty cases occurred in my practice, of which about thirty died, giving striking proof of the severity of this serious epizootic.'

In the department of the Somme, France, a mysterious disease showed itself among horses, which is thus noticed in the Proceedings of the Alfort Veterinary College: 'A disease, bearing the character of an enzoötic, appeared, towards the middle of last year, among the horses of one of the largest

¹ The Veterinarian, vol. vi. p. 207.

proprietors of the department of the Somme. M. Renault was immediately sent for to examine and treat it. At the time of his arrival, the disease had prevailed for nearly three months; and out of one hundred and thirty horses which were in the stable at the time of its development, forty-nine were dead, and fifteen ill from it. They knew not what to think of this affection, in which no organ seemed to suffer or be in the least altered, either before or after death. Many of the patients ate heartily up to the last moment. The various methods of treatment adopted all failed. There was nothing to direct their researches, and their efforts to prevent it were not more happy. Among the persons who were consulted, some attributed it to the unhealthiness of the stables; others to the bad quality of the water; some believed it to be contagious; the people of the establishment believed all sorts of things; the owner knew not what to think in the midst of all these contrarieties, and was in absolute despair. M. Renault set to work immediately to study the character and nature of this fatal malady. Of the fifteen horses which were diseased at the time of his arrival, eight, of whose recovery there was no hope, were destroyed, and the examination of them served to throw light on his researches. In comparing the observations which he made on the carcasses of the dead with the symptoms and character of disease observable in the living, he was assured that the primitive alteration, the essential malady, was in the blood, which, whether taken from the dead or the living animal, covered his hands without reddening them, and either did not coagulate, or formed a mass of a dirty grey colour, and contained a very small proportion of fibrine, which was easily proved by analysis. These alterations were yet more perceptible in the horses that had been diseased for some time. There was so little cohesion between the organic elements of the blood, that even during the life of the animal the fibrinous elements separated from the liquid whenever it was agitated, even in the slightest degree. Agreeably to this, in many of the carcasses that were opened immediately after death there were found little parcels of pure fibrine floating between the cords which retain the mitral valves, or resting

on the fleshy columns which traverse the left ventricle of the heart. In one horse that died after being ill fifteen days, M. Renault found an adhesion between the wall of the left ventricle and one of the mitral valves; the adhesion was formed by a little fibrinous mass, deposited doubtless for some days beneath this membranous fold. If we add to these characters the paleness and flaccidity of all the organs which, like the red muscles, are essentially fibrous, the absence of all traces of either acute or chronic inflammation in any organ, and the rapidity with which the carcasses became putrefied, it cannot be doubted that the disorder existed in the blood, characterized by the small proportion of fibrine and colouring matter in this fluid, as well as by the easy separation of its elements.'

At Stuttgart, the Veterinary Professor Hering witnessed an extraordinary and fatal epizooty among horses. 'The following described disease, by its suddenly attacking horses which a short time before were perfectly healthy, by its extremely rapid course, and by its deadliness, has caused as much alarm as the cholera did in the human subject on this its first appearance. Several of the most prominent symptoms add to the resemblance otherwise to be found between the diseases; so that the attention of medical men, as well as that of the public, was awakened to its importance. Happily, however, it disappeared as rapidly as it had appeared. That in places visited by the Asiatic cholera, similar symptoms showed themselves also among animals is amply proved, as well by the reports in the public press, as in the works written on that epidemic. Nevertheless, I have not observed an exact description of the same disease among horses or other animals suffering in a locality when the human species were not there affected. At that time, however, this epidemic had got no further than Moscow, and had not yet overstepped the borders of Russia, so that up to the present time Wurtemberg is perfectly free from it; and hence I cannot describe the following epizooty as identical with it, but will simply draw attention to the similarity between the two diseases. It was in the second week in September, 1830, about the time at

which the usual autumn manœuvres commence, whereby the horses of the Regal and Court Stables, as well as those of the princes and general staff, were rather more than usual, though not over, worked. Besides these, the disease attacked those horses which had not been worked, and entirely avoided the troop horses. The following must be considered as the first case. Achwerdow, an Eastern stallion of the King's private stables, was attacked with colic on the 7th of September; it was treated by the veterinary surgeon to the Royal Mews, and died the same day. On the 8th of September the stallion Aleppo, a mare, Zeida, and another horse, ridden by a lackey, were all attacked in the same stable towards the evening. Two of these had been out at the field-day in the forenoon, but had returned without the slightest appearance of illness. In the night the veterinary surgeon came to inform me of the fact, and to seek my advice. According to his description I considered the horses lost, and they were so; for none of them lived till morning. On a post-mortem examination undertaken by him, the intestinal canal appeared dark-coloured, and contained a blood-coloured fluid; the blood was tarry; the spleen was enlarged, etc. The 9th of November had nothing unusual, but in the following night there sickened a fifth case—a horse belonging to Senior-Lieutenant C., of the Royal Guard, and which died in eight hours. The sixth case was on the 10th of September, when the mare Calliope, belonging to the King's private stable, showed symptoms of illness: she was brought to the Veterinary School, where she died in two hours; she had been ridden the previous day. The seventh case occurred on the following night: a roan horse, belonging to the postmaster, Von H., and which on its recent arrival at Stuttgart had been placed in the stable of an inn not far from the Royal Stable where these cases of disease had broken out. When first seized the malady was considered an ordinary case of colic. Upon a post-mortem inspection which I undertook on the next day, the same appearances were present as in the previous cases. The eighth case happened on the 11th of the same month: at six o'clock in the morning a white mare, belonging to the Grand

Master of the horse, was attacked in the Royal Mews. At seven o'clock the animal was brought into the school and there treated. It improved rapidly, and was returned as convalescent on the thirteenth day. The ninth case showed itself on the same morning, when the farm stallion Osman sickened in the Royal Mews, and died there in twenty-four hours. Cases ten, eleven, twelve, and thirteen happened on the same day, when four horses belonging to Major Von M., adjutant to the King, were affected. After six hours' suffering a twelve-years-old bay mare died ; a few hours later a white mare, and another white mare at midnight. These animals stood in a stable near to the King's private stables. Cases fourteen, fifteen, sixteen, seventeen, and eighteen broke out in the same building, which enclosed three roomy yards, which were the stables of the Prince Frederick. Of these, five were attacked on the same day, and were treated with cold applications as if they had been affected with splenic apoplexy. Early on the morning of the 14th a bay mare died, and on the 16th a bay gelding. Cases nineteen, twenty, twenty-one, twenty-two, twenty-three, and twenty-four: of six horses which Prince Frederick had taken with him to the manœuvres on the 11th of September, not one escaped. Two of them died at C., about eight leagues from here. The other four were sent back, but a bay gelding died on the 15th before he reached Stuttgart, and a black gelding died on the 22nd of the month from the effects of the disease. Cases twenty-five and twenty-six occurred on the 12th of September. In the evening two Mecklenburg brown horses, belonging to the Comptroller of the Household, Von. S., fell sick. They had been standing in a stable adjoining the palace of Prince Frederick ; on the following morning they were brought into the Veterinary School. One of these magnificent animals, a mare, died after a hard struggle in the night of the 13th and 14th, while the other, a gelding, though at the commencement more seriously affected, was pronounced out of danger at noon on the day following. Cases twenty-seven and twenty-eight: in the same stables stood a pair of white horses, which had been driven on the same day to C. On the way back

they were both gravely attacked by diarrhœa, and were immediately taken into the Veterinary School on their arrival. One, a seventeen-year-old gelding, died in twelve hours, and the other recovered in two days. Cases twenty-nine and thirty: two horses had been standing for some time in the Infirmary Stables—one suffering from staggers, and the other from lameness. On the evening of the 13th the first symptoms of this disease were noticed, but, in consequence of the measures adopted, they began to be convalescent at noon on the next day. Of the other horses in the stable at that time none were affected, although no attempts had been made at separation. Case thirty-one: on the 14th of September in the evening, in the stud stallion stable, the stallion Jupiter sickened; on the morning of the 15th he was brought into the Veterinary Stables, and at first rallied, but on the 22nd of September he died of the disease. Case thirty-second: on the 15th of September, four horses belonging to the riding-master of the Guard came back from the manœuvres, but of this number, however, I only found one exhibiting the early symptoms of the malady, and this in a short time recovered. Case thirty-three: On the evening of the 15th, the stud stallion Amico became ill, but on the following morning was again out of danger. There were other cases treated which I have not mentioned here, because my convictions do not enable me to pronounce definitively as to their identity with this malady, and the great care shown when any horses were taken ill caused them to be at once put under medical treatment before the symptoms made any progress. The disease now made a pause, for from the 15th of September until the 14th of October, no new cases appeared. Cases thirty-four, thirty-five, and thirty-six: on the last-named day, three horses belonging to Prince Frederick, and which had fully recovered, relapsed shortly after their return from a rapid drive. One, a white gelding, died the following morning; another, a brown stallion, died the same evening; the third, a bay gelding, recovered. Without taking into account these three cases, it appears there occurred within eight days, from the 7th to the 15th of September, thirty-three cases of

abdominal typhus ; of these, twenty died from the immediate effects of the malady, and the other two soon after from its secondary consequences. In the majority of the horses attacked, one could not help being convinced that up to the period of its invasion they were healthy. Some had been working shortly before they were seized ; others were attacked while at work ; and others again had been standing for several days idle. The attack was consequently sudden and without warning ; the animals at once refused their food, hung their heads, and showed in their behaviour symptoms more of fear than actual pain. The dung was generally at the commencement hard, but shortly after diarrhœa set in, and the fluid excrement was reddish, or rather clay-coloured. In some cases, as in twenty-seven and twenty-eight, the disease began at once with diarrhœa ; in others, on the contrary, as in twenty-five and thirty-one, diarrhœa did not take place at all. The urine was scanty, and the skin was often covered with sweat, which, however, did not lead to any improvement in the symptoms. Very striking was the smell of the breath ; it was generally described as of a sweet but foul odour, like that of putrid wurzel or cabbage. It appeared to me to resemble the smell of carburetted hydrogen gas ; it was nearly always the first symptom of the disease, and it increased as this progressed. The pulse was, at the beginning, full and quick, numbering sixty to seventy, and even rose up to a hundred and twenty-eight per minute ; in other cases it was small and hard ; it always, however, soon became very weak, and in the advanced stages of the disease scarcely appreciable. The beats of the heart at first could only be felt close to the chest, but very soon it began to throb strongly. Blood drawn from the veins was black, thick, and like tar ; it settled into a solid mass without any serum, or remained for a long time fluid, and of an unctuous consistency. The respiration was often at the commencement of the seizure laboured and audible ; at a later period it became quickened ; deglutition was difficult ; although the animals remained conscious up to the last moment, there were not wanting symptoms of cerebral de-

rangement. The great depression immediately on the commencement of the attack—the noticeable speedy and considerable loss of power in its advance—the insensibility of the skin to the effects of counter-irritants, etc., all showed a serious derangement of the nervous system. With all this there were combined an increase of the pulse and the respiration, tremblings, jactitations of the neck and head, which soon terminated in paralysis. The animals in the course of the disease either did not lie down at all, or if they did, soon got up again. Age and sex appeared to have no influence whatever on the course of the disease; which, nevertheless, in the earlier cases, was much more rapid in inducing fatal effects than at a later period: in the former death occurred in a few hours, while in the latter the patients held out for twelve or twenty-four hours, or even for three days. Where the animal recovered, convalescence was as rapid, and only with two or three horses was there any doubt, after twenty-four hours, as to whether they would be saved or lost. An autopsy showed the following results: the bodies were in good condition, some of them very fat; nowhere under the skin were there serous effusions except where embrocations had been used, and even then the effusion was but slight. On the other hand, the superficial veins were distended with black fluid blood; in the intestines were found patches of a dark, inflamed, or even blueish colour, and these were sometimes more noticeable in the small intestines, sometimes in the larger; but seldom was the injection of any great extent. It only pervaded the mucous membrane, which was not thickened, but rather appeared thinner than usual. Under the serous membrane were, in some cases, small ecchymosed spots, and in one instance the mucous layer showed the same characteristic markings. The openings of the mucous follicles, especially in those animals which were seized with diarrhœa, were very visible; nowhere was there inflammation of the intestines. The contents of the stomach were, with the exception of one case, tolerably dry; in the small intestines were found that peculiar fluid before noticed as having been passed in the diarrhœa, and which was of the colour and

consistency of wine lees, having but few particles of food in it. Although the majority of the animals treated had received doses of hydrochloric acid, the contents of the small intestines had either an alkaline or a neutral reaction. The liver was sometimes larger, sometimes smaller than usual; was mostly of a light colour, and hard, though at times it was soft. The hepatic ducts were full of bile; the spleen was rather small than large; otherwise it was generally sound, though in some cases it was swollen and had dark patches in it. The veins of the mesentery and of the omentum were full of tarry blood. The kidneys were softened and darker than usual; the bladder contained a small quantity of pale, transparent urine. The mucous membrane of the genital organs of some mares was reddened; the lungs contained much dark blood, and hence were more solid than usual; the pleura was in each case covered with large or small patches of ecchymoses; and the pleura-pulmonalis was separated from the lung-tissue, as if there had been emphysema. In the trachea, the membrane of which was here and there discoloured, there was a large quantity of frothy mucus; almost always without exception the lining membrane of the aorta was covered with extensive ecchymoses where it sprang from the heart, as well as along the vertebral artery, and even in the ventricle of the heart. This contained a quantity of black fluid blood, and only in two cases—seven and twenty-one—was there found a small coagulum. The mucous membrane of the mouth was, by the distension of the bloodvessels, swollen and dark-coloured, and the same appearance was observed in the nostrils. The brain showed the membranes slightly injected, and neither on its surface nor yet in its ventricles could an undue quantity of serum be discovered. Of the exciting or proximate causes of this disease we remain in a state of perfect uncertainty; but we may surely take for granted that in the stables in which it was sought and found its victims, no occasion could be given for the appearance of this epizooty, either in the quality of the food or the general hygiene so scrupulously maintained. In years of scarcity, or when the forage was faulty, such might have been the case; but such an error in the way of manage-

ment could not well have occurred at this time where the horses, though all belonging to the one establishment, were yet kept in stables widely apart. The weather was not unusual, neither at the outbreak of the disease, nor in the previous month. The mean pressure of the barometer was, in August, 27" 4"; in September, 27" 3", and the monthly difference was 6,63" and 10,60" in September; but we must remark that the greater variations of the barometer occurred in the last third of September—at a time, therefore, when the disease had already ceased. The temperature was at the same time not remarkable, nor yet did it show rapid changes; the thermometer ranged in August between $+8^{\circ}$ and 26° , and in September between $+6^{\circ}$ and 20° . Several storms occurred in August, but otherwise the month was fine. On the other hand, it rained during the second half of September almost daily, though not heavily. If the weather had really been capable of at all exercising any influence on the abdominal typhus, it must have been noticed elsewhere, and even in Stuttgart have caused its extension. It remains, therefore, in this as in many similar cases, that the cause is completely hidden; as we can find no sufficient cause to account for the disease either in the predisposition of those attacked, nor in their nourishment, in the mode in which they were used, nor yet in the atmospherical conditions. Should we lay the blame on telluric or cosmical influences? or shall we call to our assistance the presence of a miasma, as in the case of the cholera, which is said to attack here and there a house, a street, or a town; now creeps from dwelling to dwelling, or at once makes a spring over whole countries and seas? The idea of an infection presses itself upon us by its own force, and is worthy of a thorough examination. On the one hand, several animals in the same stable and in stables which were under the same roof, or not far apart, sickened; on the other hand, although in some stables the whole, or nearly the whole, of the horses therein sickened, yet in the Royal Mews, the Court Mews, and the stud stables, as well as in the barracks of the Guard, several hundred horses were exposed to the infection without the slightest evil result. . . . Whatever causes

may have been in operation, they must undoubtedly have been more purely local than general; their influence on the animal body is less obscure than their nature. In consequence of the previous hot weather, the increased activity of the *venæ portæ* system had altered the character of the blood by making it richer in carbon; the dark colour of this fluid, the absence of coagulability, its great tendency to extravasation through the walls of the capillary vessels, points not less to an increased venosity, but even to an abnormal approach in the character of the whole circulating medium to the blood of the *vanæ portæ* (This is the only affinity observable between this disease and splenic apoplexy (*milzbrand*); with the apoplectic form of the latter it cannot be compared, inasmuch as at the commencement of this malady there is disturbance of the brain, and the senses are in abeyance; in *milzbrand* it is known that carnivorous animals are affected by eating of the flesh of the diseased; therefore were dogs and cats fed on the carrion of those which had been most affected by the malady, and they were also inoculated with the blood of these beasts, but without any result. In like manner, some people who had wounded their hands during the dissections escaped injury.) The lungs appeared to be impregnated with carburetted hydrogen, hence the odour of the breath; but the formation of this gas did not seem to have increased, the large quantity of fat in the well-nourished animals had no doubt a disadvantageous influence in this. Hence it was demonstrated that this fever was not a purely inflammatory one, and the exhaustion of the functions followed very rapidly under the influence of the sympathetic nervous system. For it is evident that the disease was principally due to the implication of this part of the nervous system, and that the brain and spinal cord were only involved at a later stage, and sometimes not at all. The sudden secretion of a large quantity of watery fluid in the intestinal canal points equally to a total subversion of the secretory functions, and equally explains the suppression of the urine which was observed. One might almost have compared this intestinal fluid with that observed in hæmatemesis,

for it had the appearance of boiled blood mingled with water. The ecchymoses, about and in the heart may be partially ascribed to the already mentioned condition of the blood, and also to the very severe death-struggles of the animals. Death arose from paralysis of the circulatory system, and especially of the right side of the heart. As the infection proceeded from the stomach and intestines, as there was fever, and the symptoms were often contradictory and bore no comparison to the dangerous character of the disease, I have, following the example of my predecessors, who have introduced into veterinary nosology a lung typhus, a stable typhus (*stall-typhus*), etc., called this malady the "abdominal or stomach typhus." Whether this typhus is the same as cholera in mankind, I leave to the judgment of others. The striking similarity between the two diseases is beyond doubt, and if the cholera had been prevalent in Stuttgart at that time, or if the horse first attacked had come from an infected neighbourhood, one would have had good grounds for establishing the identity of the diseases.¹

In Orenburg the following circumstance was noted, as an example of the poisonous character of choleraic dejections: 'As a remarkable example of the danger of cholera evacuations, it may be noticed that a physician of Orenburg, who was accustomed to take two dogs with him on his rounds, went to a cholera patient in 1829, where these animals licked up some blood that had fallen on the floor from an open vein. They were soon afterwards attacked with violent convulsions, sickened, and ceased to breathe.'²

In the village of Capitanowka, near Odessa, the lower animals seemed to have suffered from symptoms of cholera: 'In this village, in December, 1830, as also in other places, the cholera has broken out among the cattle, as well as mankind, and is causing "great mortality." At Taganrog, the same observer says of this affection among animals: 'Dr. Dobrodejew, who was sent to Taganrog, speaks in his report of the appearance of cholera among the lower animals, and

¹ *Hering*. Magazin für thierärzte, vol. iii.

² Hamburg. Magazin f. a. Lit. vol. xix. p. 374.

also among poultry, while it raged among men. In some establishments the greater part of the hens and turkeys died of this disease; the symptoms of which—vomiting, dysentery, convulsions—were also noticed in a crane, and in several dogs.¹

Fowls shared largely in the prevailing unhealthiness of the season, and there was a strange similarity in the symptoms: 'At Kortschewa (Poland), geese and ducks were frequently attacked by cholera. This was marked by outstretched head and neck, which they held low over the water, and constantly swayed to the right and left. On the land, when walking, they fell on their side as if giddy. They vomited a fluid like clear water, and purged a whitish-coloured matter. Nothing was noticeable about the head; the intestines, however, and especially the rectum, contained a creamy fluid.'²

In the month of May, in the year preceding the arrival of the cholera, a malady appeared among the domestic fowls in Posen, which was supposed to have been brought from Poland. Hens, turkeys, ducks, but above all, geese, died in large numbers in all the circles of the grand-duchy, and particularly in that of Inowraclaw, in the months of August and September. It was also reported to have been prevalent among the wild ducks in the lake of Goplo. 'Those first attacked were in general the geese, then the ducks and the turkeys, and the last the hens. Sometimes a number would have diarrhœa or dysentery, and they would begin to walk lame, and very slowly; then they would lie down and lose the power to get up again, continuing to eat until they suddenly died. Others, without any premonitory symptoms, would unexpectedly die while eating, walking, or swimming. Dr. Erdt, at Bromberg, relates that when to all appearance healthy, they were seized with vomiting and diarrhœa, and in about an hour or half an hour they died; if they lived for a day they had vertigo and ultimately perished. In their bodies were found an enlarged liver, and the gall-bladder increased in size, and full of bile; the muscles of a deep-red

¹ Hamburg. Magazin f. a. Lit. vols. xix. xx.

² *Radins*. Mittheilungen, vol. ii. p. 42.

colour; those fowls which died at night exhaled a very strong cadaverous odour in the morning. In some the lungs were dark red, black, and softened, and gorged with black blood. The stomach was in general large, and contained a yellow mucus and sound grain; the intestines were empty, except having a quantity of yellowish mucus. The bodies of these animals contained much fat.¹

In Galicia the cholera appeared at the end of the year. At the same time so great a mortality broke out among poultry, that in some places the greater portion of the turkeys and hens died, and there was an unheard-of scarcity of fowls. The symptoms were as follows: 'The animals attacked became dull, did not eat, drank much, and carried their heads very low, and in such a way that in the course of the malady they have been seen sitting with their bills resting on the ground; from their mouths a limpid mucus flowed, and they had a looseness by which a mass of mucus resembling milk was evacuated. The disease usually lasted for two days, though sometimes it terminated sooner. Only about one-fifth part of those attacked recovered. Those that died were emaciated, their skins were dark brown, the stomach blue and pulpy, the intestines empty and of a violet colour, the liver pale, and the eyes deep sunk in their orbits. Canary-birds died in many houses.'² During the prevalence of cholera at Moscow, Dr. Jaenichen saw geese, hens, and turkeys, and many other species of animals, affected with similar symptoms;³ and in the government of Twer poultry suffered from cholera.⁴ At the end of the year a deadly epizooty raged among fowls at Trieste, while the epidemic was most severe among the people there.

In the Austrian dominions we have an elaborate detail of the diseases which were observed among beasts and birds during, or previous to, the epidemy, by Hildebrand. According to his researches, derived from eye-witnesses, the air in many places was filled with a stinking fog, and electrical machines

¹ *Cohen*. Generalbericht d. Med. Colleg. zu Posen, 1830.

² *Oesterreich*. Med. Jahrbuch. vol. xvii. p. 442.

³ *Heusinger*. Op. cit. p. 95.

⁴ *Kleinert*. Repertorium, vol. i. p. 284.

would produce no sparks. Plants did not blossom well; cabbages and cauliflowers were blighted, and those who used them as food had diarrhœa. Vegetables in general lost their flavour, and were dangerous to eat; toads were seldom seen; tree caterpillars resolved themselves into a blueish dust; certain species of insects, of the genus *carabus* and *curculio*, were not to be seen; sparrows and swallows were very scarce during the summer months, as well as rats and mice, and jackdaws had disappeared; flies, game, and fish were seldom seen. Hares, foxes, and wolves were found dead in the woods, and no song-birds were heard among the trees; indeed, the country people were struck by the universal stillness, where before birds used to make a regular din. Fish floated dead in the streams and lakes, and in the leech-ponds these useful creatures had nearly all died or disappeared; those procured with some trouble were far from being vigorous, and would rarely perform their required functions. At the gardens of the Grand Duke Palatine, at Ofen, three pairs of water salamanders, which had been kept in a pond for a year and a half, died the second day after cholera appeared in the locality. Canaries died in the houses whose inmates were attacked, and all the domestic animals—horses, cattle, dogs, pigs, cats, and poultry—were seized in some place or another with symptoms more or less of cholera. In one farm, out of one hundred and seventy-two cattle, one hundred and two died within a very brief space—and the mortality varied, but was generally great. In a particular district it was noted that oxen needed one-third more forage to enable them to get through their ordinary work. All seemed troubled and weaker than usual, and more particularly was it remarked that their procreative functions were affected, for they produced fewer young, and these were small and weakly.

Out of six thousand Spanish sheep which, at other times, were estimated to produce fifteen hundred lambs, only one-half were obtained in the cholera year. Vegetation was thought to have lost much of its nourishing properties, and animals appeared not to thrive on it. In cattle and horses particularly, diarrhœa was a prominent symptom, and this was

in many cases relieved or cured by mixing in their food some ipecacuanha. As the cholera disappeared the heavens brightened, the air became purer, and the most delightful weather set in—the autumn lasting far into November, and the flowers blossoming a second time.¹

At Paris, and elsewhere in France, M. Moiroud records an epizooty of diabetes in horses.² In Nassau an epizooty of anthrax appeared among hogs, and Professor Hertwig of Berlin describes a strange outbreak of ‘grease’ in horses, which I will notice more lengthily in the author’s own words, as it possesses some points of importance: ‘In Berlin, after the lower animals had been tolerably free from disease during the winter, and only such sporadic affections as catarrh and gastric derangements had shown themselves, there suddenly appeared a wide-spread attack of “grease” (*mauke*) among the horses, and in March and April it assumed a real epizootic character. It affected those horses which were kept in the stable quite as frequently as those always employed out of doors, and spared neither sex, age, nor race. The animals showed slight fever, rested one of the limbs, which showed increased warmth around the coronet or the pastern. After a few hours, never beyond the second day, swelling was noticeable, and then exudations of a yellowish fluid were perceivable; in from three to four days, in most, but not in all horses, extensive sloughing of the skin took place. In a short time inflammatory ulcers appeared—sometimes on the coronet, and at other times before or behind the pastern—extending deep into the cellular tissue, even to the tendons and bones, spreading themselves to some distance. The discharges from these ulcers was of a yellowish colour, occasionally mingled with blood, highly putrescent, and stinking—the stench, indeed, was so great that two patients so impregnated the atmosphere in a ten-stalled stable as to make it unbearable to any human being. In from six to eight days the tumefaction began to decrease, and the tension to which it gave rise subsided; as a consequence, the ulcers assumed a healthy suppurative cha-

¹ *Hildebrand*. Oesterreich. Med. Jahrbuch, vol. xvii.

² *Recueil de Méd. Vétér.* vol. vii. p. 327.

racter, and began to granulate, and in almost all cases the healing process rapidly set in. The only exceptions were those in which the bones, the cartilages of the hoof, or the sinews had suffered. From the large quantity of acrid fluid which ran from the ulcers, it was almost impossible to avoid soiling the hands during examination or treatment, and the consequence was that I and ten students were really infected. I had no wounded finger, neither had several of the others, though for the remainder there is no certainty. In from six to eight days we all had fever, weariness, and indisposition. On nine of the infected dark-coloured pustules showed themselves on the fingers and hands, but especially on the joints of the fingers ; and at the same time the lymphatic glands began to inflame on the arm, and the lymphatic glands in the axilla also became more or less swollen. This implication of the lymphatics always manifested itself by red streaks beginning at the hand and running up the arm towards the shoulder. The swelling of the glands was in many cases so great that the arm could not be bent on the breast. The pustules in three days became ulcers, which had quite the character of carbuncles, and were healed by digestive ointments ; if the other symptoms subsided the patient recovered in fourteen days from the outbreak of the disorder. It is remarkable that two of the students, in addition to the above-mentioned swellings and ulcers, had also pocks upon the arm which, in appearance and in their different phases, bore the most exact resemblance to the true cow-pox ; and it is still more remarkable that both these subjects had been affected with the small-pox in their youth, and had never been vaccinated. On the contrary, I and the others had been vaccinated. Dr. Bremer has closely observed and described these pustules daily on one of the eleven, and I also vaccinated a cow and a calf with the exudation from the horse's heels, and in both these cases no pox appeared. Whether, then, this matter of "grease" is of the same nature as that described by Edward Jenner as protective of small-pox, I cannot decide, as no description of this material has yet reached me ; even in England I have asked for it in vain.¹

¹ *Hertwig. Verhandlung d. ärztl. ges. d. Schweiz, 1830.*

Vast swarms of a gnat (*Simulia Columbaschensis*) which is bred in the marshy regions of Servia, appeared in a large tract of Austria, Hungary, and Moravia overflowed by the river Marsch, and hundreds of horses, cows, and swine perished from their bites.¹

The following curious circumstance was communicated to the Zoological Society of Paris by M. Baraquin, in 1867: 'In 1830 there was such an abundance of horses in the island of Marajo, belonging to the delta of the River Amazon, that a president of the province of Para made an agreement with a company to allow them to kill as many of these animals as they chose, for the sake of the skins, which fetched fifteen francs each, while the live horse did not cost more than six francs. The horses were slaughtered with such carelessness that the carcasses, left unburied, gave rise to a dangerous infection, which could only be got rid of by setting fire to the whole island, which was thickly wooded. This measure caused the death of all the horses that still survived, and since that time it has been impossible to re-introduce the breed on the island, all the horses brought thither soon falling victims to a paralysis of the hind-legs.

A.D. 1831. Epidemic influenza appeared in Europe. At Paris it was prevalent in May, and was named '*la grippe*.' A remarkable analogy was noticed between the 'medical constitution' which existed for some months previously and the development of the disease. Scientific observers are generally of opinion that these catarrhal epidemics have nearly always followed cold moist seasons, and appear to be more immediately induced by sudden atmospheric vicissitudes. The symptoms exhibited by people who were attacked closely resembled those observed about the same time in the equine species.

In England, during the month of May, the weather was unusually variable, the barometer rising and falling suddenly, and the thermometer standing one day at 80° (Fahr.), and another day at 32°. The wind prevailed steadily from the north-east. In June, the thermometer ranged from 40° to

¹ Kirby and Spence. Entomology, p. 82.

80°, generally varying between 75° and 60°—an unusually high temperature ; with a south-west wind, and a singular humidity of the atmosphere.¹ This was the month in which the influenza began. The symptoms in mankind commenced with coryza, attended by cough ; dyspnœa, with severe bronchial irritation supervened, when the paroxysm suddenly became greatly aggravated. One symptom was remarked as being general and prominent : a feeling of lassitude and fatigue of the limbs, with more or less great moral prostration. The disease was not very fatal, and generally lasted for eight or ten days.² This disease prevailed very extensively among horses, but in a more serious form than in mankind. ‘At the close of last summer, and at the commencement of the autumn (influenza in man having commenced in June), a disease of an epizootic character prevailed rather extensively in these parts ; and, as I have reason to believe, it extended elsewhere. . . . I have never seen the disease described by any English authors.³ The virulence of the complaint differed very much in different subjects, and I will proceed to mention the symptoms attending the most virulent cases. Attention was invariably first called to the disease by the sudden and total loss of appetite. On examination, the mouth was found excessively hot, the bowels costive, and the fæces cased in mucus ; urine scant and high-coloured, pulse from 70 to 90 in a minute, increasing in one or two cases to 120, and often intermittent. . . . The whole countenance was dull and heavy, and the lids, particularly of one eye, generally considerably swollen.’⁴

Mr. Percivall, writing in 1832, observes : ‘During the last month, March, and also—though to a less extent—during the present, an epidemic disorder has been flying about among the horses in this neighbourhood (London), which, though quite of a different nature from the one that has caused so much needless alarm and disturbance among the rational part

¹ London Medical Gazette, vol. viii. p. 587.

² *Bascome*. Op. cit. p. 159.

³ This veterinarian was evidently not acquainted with the writings of Gibson, Osmer, and others.

⁴ *Spooner* (Southampton). On the Influenza of Horses, p. 9.

of the creation, has called for the vigilance and attention of the medical practitioner. . . . It has proved a disorder readily recognizable, and one (judiciously treated) unattended with danger. To the eye of the experienced practitioner, the animal's countenance at once betrays his malady. . . . The first intimation you have of the complaint is, that the animal is 'off his feed ;' that he either ate nothing, or but a little hay during the past night ; and that he has likewise refused his morning feed. You visit the animal, and find him dull and dispirited, his countenance betraying his malady ; the eye exhibiting either that peculiar gloomy dolorous aspect which a drooping lid and listless spirit give it, or else itself being affected with the disorder, when it is found nearly or quite closed, and overflowing with lachrymal secretion. The pulse rarely is so low as 50, and seldom mounts beyond 60. The coat—particularly on the parts left exposed—becomes pen-feathered, loosing its glossy sleekness ; the extremities become cold ; the mouth unusually warm and dry ; the urine sparing, and more or less difficulty in voiding it ; the dung contracted into small hard balls, and sparing in quantity. Such are the ordinary—the *very ordinary* symptoms. Now and then the disorder has been ushered in by a shivering fit, which I have known to last—off and on—for twenty-four hours. Some cases exhibit catarrhal symptoms along with the above ; a cough is a common concomitant ; a discharge from the nose more commonly supervenes upon the primary disorder than commences with it. The most common of the *sequelæ* of the disorder is swelling in the legs—the *hind* always, sometimes the fore too. In too or three cases it has been ushered in by vertigo, to such a degree that the animal has with difficulty staggered a few paces from its stall into a box. . . . I consider the said disease *extraordinary*, because it attacks many horses at the same season, without manifesting any results that lead me to pronounce it contagious it manifestly disorders the whole frame and constitution of the animal, without evincing any signs enabling us to detect its seat or source. In one case the *eyes* are most affected ; in another, the *legs* ; in a third, the *air-passages* ; in a fourth, the

brain. In many, none of these local attacks have developed themselves. I consider it to be of a nature different from diseases in general, because it will not unfrequently make its appearance in an animal at the very time that he is under the influence of those agents which are found most effectual in its removal.¹

This influenza also affected the horses in Scotland, according to Professor Dick, of Edinburgh, who witnessed a similar malady affecting cattle.² In the *Compte Rendu* of the Veterinary School at Lyons, for 1831, we find that the epizooty had extended to France. 'The variable temperature and frequent rains that occurred towards the close of the last year and the beginning of the present one, caused a great number of inflammations of the mucous membrane of the respiratory passages both in the horse and dog. In the latter, the disease which attacks young animals consists of a simultaneous inflammation of the mucous membrane of the alimentary and pulmonary organs, particularly the last. It resisted all the ordinary means of treatment, and destroyed the greater part of those attacked. With the horses, in nearly fifty of those affected with this inflammation of the mucous membrane of the respiratory passages, the malady was not serious; but laryngitis was frequently complicated with coryza, rhinitis, tracheitis, or bronchitis. In the latter form, an accidental symptom is frequently observable, namely, a very loud respiration—a sort of snoring, which becomes more intense when the patient is eating. In all the animals attacked by this disease, the throat was sore; a few had considerable tumefaction of this part, and some evinced much pain when the trachea was compressed; all coughed more or less, while there was a slight mucous discharge from the nostrils. The mucous membrane of the stomach participated very little in this morbid affection, as evidenced by the unimpaired state of the appetite.'³

In the district of Hoxter, Prussian Westphalia, this disease

¹ *Percivall*. The Veterinarian, vol. v. p. 216.

² *Dick*. The Veterinarian, vol. vi. p. 209.

³ Journal de Vétér. de Lyon, 1832.

—which was there designated a ‘nervous epizootic fever’—appeared, and was very fatal. In one establishment, for instance, seventeen out of twenty-one attacked died. Later in the year it became more general, and a very large proportion of those affected succumbed. At the same time what was called a ‘nervous catarrhal fever,’ with more or less of bronchitis, seized cattle; it was not severe, and but few died.¹ As we shall see presently, the epizooty was generally prevalent in Germany.

An epizooty was reported by Burnes as affecting the horses of Runjeet Sing, at Puttee, in the Punjaub. ‘The horses of this stud were lately attacked by an epidemic disease, of which a Mahommedan, who resides in a neighbouring sanctuary, is believed to have cured them. Though a Mahommedan, the Sikhs have in gratitude repaired and beautified his temple, which is now a conspicuous white building, that glitters in the sun.’²

In Mandroros, Russia, a severe epidemic of gangrene of the spleen—almost identical in its pathological features with the splenic apoplexy of the lower animals—caused much mortality. An epidemic of ergotism was also reported as occurring in many northern countries, caused by the wheat, rye, and corn having become diseased. It lasted during this and the next year, and animals seem to have suffered. Wagner described it as it appeared in the marshy districts of Saxony, the circle of Schlieben, and on the banks of the Elster. ‘A light frost destroyed the blossom on the vine and the rye in 1831. Each partially withered blossom of the rye crop, instead of a healthy seed, brought forth a spur of ergot about three-fourths of an inch long. . . . In some houses, where the disease raged most violently, grain was found consisting of two parts of diseased and one of bitter rye, vetch, and a variety of other seeds. . . . Pigs ate ergotized rye (*mutterkorn*), and suffered from its effects. Dogs, however, instinctively avoided it; but when compelled by hunger to eat it, they exhibited symptoms of madness (*tollwuth*). I believe that such food was partaken

¹ Sanitätsbericht des Med. Colleg. zu Munster, 1831.

² Burnes. Travels into Bokhara, vol. ii. p. 10.

of here and there by dogs, and that it assisted in producing madness, as dogs and cats were so affected that no man ever remembers seeing so many mad as during the existence of the ergotism (*Kriebelkrankheit*) among the people.¹ This unhealthy grain may have had something to do with the sickness among the lower animals which prevailed at this time, and which was ascribed to the choleraic influence, though its share must have been small.

In the district of Bray, Seine Inférieure, France, a typhoid contagious pneumonia (epizoötic pleuro-pneumonia?) was very destructive among cattle, and increased until 1839.²

Small-pox in sheep was unusually prevalent in Bavaria.³

The Russian troops engaged in the conquest of Poland had carried with them into that unhappy country, in addition to the miseries of war and the cholera, the Cattle Plague, by means of the droves of cattle derived from the Steppe country. We shall see that it was introduced into Courland from the infected districts, and soon spread in that country, and from thence into the government of Bromberg, Prussia, where it raged in 1832.⁴

Cholera in mankind was still continuing its ravages. It followed the Russian army sent to subjugate Poland, and in Warsaw and many other places it was very destructive in April and May. In June it had reached Cracow and extended to Galicia, Hungary, Smyrna, and Constantinople. It also appeared among the pilgrims at Mecca, and was very fatal. In August it broke out at Alexandria, and about the same time nearly all the towns in the Delta of the Nile suffered greatly. In Bagdad a fearful mortality raged among the people, caused partly by the overcrowding of the inhabitants, due to the surrounding country being inundated by the rivers Tigris and Euphrates. Cholera showed itself in Northumberland in October, and made its appearance in

¹ *Wagner*. Journal de Hufeland, vols. lxxiii. lxxiv. lxxv.

² *Delafond*. Recueil de Méd. Vétér. vol. xvii. p. 593.

³ Wurtemberg. Verordn. p. 151.

⁴ *Erdt*. Mittheilungen über de Rinderpest in dem regierungsberg Bromberg. Gurlt und Hertwig. Magazin, vol. i. p. 43.

Scotland about Christmas, Edinburgh and Leith being severely visited in the following spring. Authors speak of fogs and stinking mists in various places before or during the prevalence of this pestilence,¹ of modifications of the state of the atmosphere with respect to its electricity and other characteristics, as well as other phenomena, such as birds leaving their nests, etc. In Hesse and the neighbouring countries, universal astonishment was excited by the arrival of immense swarms of caterpillars of the *Artica Caja*, which covered the pastures and the cultivated ground.²

¹ For instance, in England Dr. Neale remarks : ‘ Sunday, 8th of August, 1831, it was new moon at ten o’clock in the evening ; light winds variable from the south-west to the west and north-west quarters ; thermometer between 79° and 83° in the shade towards midday. On Monday (9th) and Tuesday (10th), I remarked (although the atmosphere was dry and clear) a *smell as if of burnt leaves*, which has been observed at times to precede pestilence. On the Wednesday morning (the 11th), having been awakened by some noise as early as three o’clock in the morning, I arose half an hour afterwards, and on going to the window of my chamber (which fronts the east), I remarked, on drawing aside my window-blinds (the sash having been left open all night on account of the oppressive heat of the weather), that the rain, which had been falling all night, *was still descending very heavily* (as in a more southern climate), but that there was at the same time *a very thick mist, of a tawny-orange colour*, and that the wind was then *south-east*. In about an hour the rain ceased, and the wind having shifted successively to west, and north-west, the *mist* disappeared, and was followed by a clear day of sunshine. That afternoon, very many people were attacked in the city of R. with severe cholera, attended with dreadful spasms ; and on the following morning, Mr. B., a practitioner in S. (a small town at a little distance, built on a marsh, near an estuary of the sea), was called up early to thirty persons all attacked suddenly with dysentery, attended with violent spasms. As to myself, after remaining at the open window for seven or eight minutes, observing this strange mist, I perceived a very strong and disagreeable bitterish taste in my mouth, which I could not get rid of until I had gargled several times with a mixture of chlorate of lime and water. A neighbour of mine, who had also been awakened by the noise, and had gone towards her window and looked out at the mist, was seized that afternoon with nausea and colicky pains and other gastric symptoms, and an eruption on the sacrum. . . . On the same day, this lady’s daughter, living in the adjacent town over which the mist had passed, was seized about three o’clock p.m. with a very alarming attack of cholera, attended with strong spasmodic symptoms. . . . Once before, I recollect to have witnessed *a similar tawny-yellow mist*, which occurred at Ciudad Rodrigo, Spain, in the morning of a dry day, during the month of August, 1812. The mist was followed by great sickness amongst the British troops from the yellow fever, which prevailed epidemically during the whole of that warm summer and autumn.’—Op. cit. p. 234. It appears that the Arabs term the cholera *Rih el Asfar*, or ‘ Yellow-wind.’—Burton. Pilgrimage to El Medinah and Mecca, vol. i. p. 367.

² Heusinger. Op. cit. p. 368.

The diseases of the lower animals were closely observed in many parts of the Continent, and especially with reference to their relation with the cholera in mankind. At St. Petersburg, leeches were observed to be curiously affected, according to Mayer, who says: 'Leeches, although fresh caught, bit (in the case of non-choleraic patients) unwillingly, and died in large numbers without having been used, and notwithstanding the utmost care having been taken for their preservation.'¹

The Medical Society of Stettin, which undertook an investigation into the nature and causes of cholera in that town, makes the following observation with regard to epizootic diseases: 'Still we notice that the *milzbrand* (anthracoid) class of diseases was prevalent only in the year 1826; later they were only local until the year 1829, when they again became general, as well as the other enzoötic diseases common to oxen—such as the lung-disease, and the sheep-rot, which in time became more rare. One striking peculiarity in the animal world must be noticed here, and that is, that the year 1827, which was highly favourable to all kinds of insects, brought the locusts, which had not been seen in our province since 1754. In September, 1827, in the village of Leopoldshagen, near Anclam, immediately after a heavy storm, three hundred and fifteen geese died within an hour, and without any appreciable cause. From June till August, 1828, along the whole course of the Oder and its estuaries, there was observed a phenomenon, which, so far as our researches extend, has never before been witnessed in this country, although a similar occurrence is not unfrequent on the coast of Italy and other places—namely, a mortality among fish. First of all the sturgeon died, and, later, pike and eels; and in such a quantity that their bodies lay along the banks in thousands; so that here and there police measures became necessary to guard against disease being generated from their decomposition. An examination of their bodies showed inflammation of the intestinal canal; no satisfactory reason could be found for this disease. A similar mortality occurred among fish of

¹ Mayer. Erfahrungen und Bemerken über die Cholera-Epidemie, p. 79.

all descriptions, in 1830, in the so-called Upper Lake of Gültzow.¹

In the Baltic, the fish were suffering from some strange disease. 'The newspapers, as well as the reports which, during my residence at St. Petersburg, arrived from Riga, allude to an enormous mortality among fish in the Baltic; and it is known that the inhabitants of the peninsula of Hela, who are entirely supported by the fishery, were obliged to be furnished with the means of living from Dantzic, as, for the first time, their usual subsistence had failed them. Like occurrences were noticed in other places.'² In Eastern Prussia, the finny tribes were in an unhealthy condition, and perished in large numbers in the lakes and ponds without any assignable cause. 'In several lakes in various neighbourhoods in the district of Marienburg, the whole of the fish have nearly died. From the Zempelburg lake alone, the police have already buried forty tuns full. This occurrence is by no means uncommon, and has no necessary connection with the epidemic now raging. In the autumn the large stagnant waters often assume a green or even a reddish colour, and thereafter, and also perhaps in consequence thereof, the fish oftentimes die. This green and red, and occasionally blood-like, colouring of the water appears to the naked eye only a coloured slime; under the microscope, however, it is discovered to be a vegetable production consisting of various plants. The botanical names of such as are known, whose appearance is really accompanied by the death of the whole or a portion of the fish, are as follows: 1. *Oscillatoria rubescens*. The renowned botanist, Lecandolle, gave this name to a red, slimy, and filamentous substance which, in the year 1825, coloured the lake Murten, in Southern Switzerland, red, and in consequence of which large numbers of dead fishes appeared upon the surface. 2. *Palmella ichthyoblable* was a green substance, so named by Professor Kunze, of Leipsic, which covered a fish-pond near that place, the fish in which also died.'³

¹ Die Epidemische Cholera in Stettin, p. 8.

² Barchewitz. Über die Cholera, p. 16.

³ Ehrenberg. Bemerkungen über das absterben der thiere an orten wo die Cholera or herrschte. Berlin, 1831.

It was likewise reported that at Landsberg, in Brandenburg, an immense quantity of fish died in May, 1832 ; so that many men had to be employed for a number of days in burying them. Their livers were found soft and discoloured.¹

The general diseases affecting fish have often been alluded to in this history ; though beyond their occurrence, and the occasional reference to some probable or improbable cause, nothing has been satisfactorily ascertained of their nature or generating influences, notwithstanding that these may be as various as in the case of warm-blooded creatures. Even with the piscine tribes as with terrestrial animals, certain regions may be the unenviable haunts of subtle but powerful forces which generate destructive maladies among their finny shoals, and more or less affect the welfare of men or animals dependent upon them for sustenance. For instance, near the Frozen Sea, on the coasts of Siberia, great numbers of fish perish annually, and we cannot select any writer more worthy of credence for an account of this fact than Erman. Speaking of this part of the world, he says : ‘ The mouth of the Sosva, like those of the other Uralian streams which descend into the Obi, is of the greatest importance for the fishery ; for in December all the fish which ascend from the sea turn westwards towards the sources, and remain up these rivers until spring. With respect to all other portions, however, of the Obi and its tributary waters, the Ostyak and Russian fishermen agree in asserting that they lose their inhabitants, the fish in them dying about the beginning of January. The rivers then die off, to use their expression, and living places are to be found only in the vicinity of the springs. They talk of the ‘ Samòr ’ or convulsions, and also of the ‘ blast ’ or vapour, as of some peculiar deadly principle which comes upon the fish and destroys them, either when at liberty, or when taken in the falls. They suppose that the water then acquires a quality poisonous to the fish, though to the eye and taste it has undergone no change, and produces no effect on the men who drink it. It may be reasonably conjectured,

¹ Sanitätsbericht d. Provinz Brandenburg, 1832.

² *Erman*. Travels in Siberia, vol. ii. pp. 2, 59.

that the river-water under the ice gradually loses the air necessary for the support of life ; but some different explanation seems to be required for the suddenness of the effect, and also on account of the remark of the fishermen, that the Samør is more or less delayed and checked in its operation wherever springs enter the Obi, whereas it is particularly fatal in waters issuing from bogs and stagnant lakes. I had subsequently an opportunity of convincing myself of the existence of a similar mortality among the fish at the breaking up of the ice in the rivers which enter the sea of Okhotsk.' Speaking of the young fish descending the rivers to the Polar sea, between the months of January and June, he remarks : 'Of the parents of this brood, however, those alone which have ascended farthest, and have first deposited their spawn, can possibly return to the sea ; the rest, which reach in their descent only the middle portion of the river, end their lives by what appears to be a general malady ; but perhaps the true view of the matter is, that the sea is deserted annually, not by all the individuals of every kind of salmon, but only by those of an advanced age, a considerable number of which are not merely impelled by instincts connected with the business of procreation, but also await their death (under any circumstances not far distant) in the calm waters.'

M. Guyon, in a paper read before the French Academy of Sciences, relates, that in 1831, when the cholera raged at Warsaw, an epizooty appeared among the horses of a cavalry regiment stationed there. Six of them died, and the most prominent symptom manifested during their illness was 'the sinking or retraction of the eyes within their orbits,' and this characteristic was not absent from the *facies* of these animals after death ; it is, of course, a most notable symptom in cholera. In a village in the neighbourhood of Warsaw, twenty-seven cows died in the space of eight days, after having shown, as principal symptoms, intense thirst ; injected tearful eyes ; ears burning hot at their roots, but cold at their extremities ; black and hardened fæces ; borborygms ; and coldness of the surface of the body. A young bull kept in a stable in Warsaw, not far from the Vistula, dropped dead when turned

out to graze. When the body was inspected, it was observed that the eyes were drawn deeply into the sockets ; the vessels of the conjunctivæ were gorged with black blood, giving the membrane a dark-blue tint ; the tongue and gums were cold and extremely livid ; and it was only necessary to prick the skin covering the muscles, or even to pass the fingers through the hairs on the muzzle, to provoke muscular contraction. In a village near Warsaw, a whole brood of chickens died, with the mother, in one day. Their bodies were maculated with black spots. During life they had passed nothing, either by the beak or anus ; the combs were black, and the crop swelled very much before death.¹

Hildebrand, with great care, has collected from various sources, and chiefly from the reports of competent authorities who were eye-witnesses, a copious detail of the affections among the lower animals during the progress of the cholera in the Austrian Empire. In continuation of last year's reports, he mentions similar occurrences as taking place in Moravia and Silesia. Space, unfortunately, forbids my giving a list of the various places where particular phenomena were observed ; so suffice it to say, that during the cholera, or immediately preceding it, all kinds of birds left their nests and did not return until it had disappeared. Typhoid dysentery was prevalent among cattle in some places ; and goats, chamois, cats, pigs, and even frogs, died in unusual numbers.

Thick, stinking clouds were observed here and there, and where they settled over the hop-gardens the hops looked as if they had been eaten by insects. These were remarked to be very scarce. After a heavy thunderstorm in one district, the malady slackened, and after another it altogether disappeared. Fish and lobsters appeared to suffer severely in Olmutz ; the former came to the surface of the water, looked stupefied, and were easily caught. When examined, they had a glutinous slime over their bodies, and this, along with their scales, readily came off. When thrown back into the ponds they endeavoured to come again to the shore. Carp especially sickened in the fish-ponds, and died. They were noticed to

¹ *Recueil de Méd. Vétér.*, first series, vol. iii. p. 210.

lie with their backs above the surface of the water for four or five hours, and then, turning on their side, to die. When taken out of the ponds alive their eyes were said to be sunk in their heads, and towards their tails they appeared quite rigid. Circumscribed quiverings, in extent about the size of a shilling, were observed in various parts of their bodies, and when this occurred they were certain to die within an hour. Nothing particular was observed on examining them after death, except that their blood was darker than usual. The lobsters and crabs were remarked in open day to creep out of the water in large numbers, and seek the banks of the rivers. In one tract of country which was partially submerged they took refuge in the hedges, in which situations they were easily captured by boys with baskets. Roes and hares suffered very much, and were often found dead. In the woods of Dobrauer alone, one hundred and sixty-five hares were picked up by the foresters; many more must have been collected by other people, and a larger number never found at all. Their lungs and livers showed signs of disease. Leeches were also reported to have died in large numbers, and so severe was the mortality among them that in some places they all perished. Malignant lung-diseases were prevalent here and there, and rot among sheep was not unfrequent, even where no cholera was present. Milch cows gave less milk than usual.

In Bohemia, like events attracted attention. Typhoid lung-disease was remarkably prevalent, and anthrax was common and very fatal among cattle, which were also attacked with dysentery. Those that did not manifest disease, yet looked dull, had less appetite than in ordinary times; they shivered a good deal, and were alternately hot and cold. These symptoms declined as the cholera disappeared. Goats and dogs were attacked with choleraic symptoms. Several instances occurred where dogs perished in the houses in which the epidemic was present, and with symptoms almost identical to those exhibited by their owners who were affected. Although the weather was apparently favourable to animal life, yet even the untamed denizens of the woods and fields testified to the presence of some mysterious agency. Hares were also found

dead in this country, and when inspected they were observed to be emaciated, their flesh was of a blueish-red colour, the intestines were inflamed, and the bodies rapidly passed into a state of putrefaction. So unhealthy did they look that people were afraid of eating them. The number of cats that perished was most striking. They were seized with dulness, loss of appetite, had great thirst, violent vomiting, and a slimy, watery diarrhœa ; they usually died in convulsions. A post-mortem examination showed the vessels of the brain full of blood, the mouth rigidly closed, and full of viscid saliva. The pleural membrane was nearly dry, with reddish spots ; the liver full of blood, and friable ; the gall-bladder large and distended with bile of a green colour ; the intestines inflamed, and their mucous membrane softened, their contents being a white slimy fluid. The bladder was contracted and empty, and the muscles of a dark red ; the rectum was, in nearly all cases, dilated, and observed to be covered with white slime.

In Lower Austria there appeared also to reign an unusual condition of the animal world. House-flies had nearly all gone away, and entomologists asserted that they had never known butterflies and moths to be so scarce. In September, horses were frequently attacked with colic, and suffered very much. An ape which had been in confinement for more than two years, and during the whole of that time had always remained in good health, was attacked with a not very severe diarrhœa, which lasted for three weeks, when it recovered spontaneously, as the epidemic in mankind began to moderate. Cats died as numerous here as elsewhere, and from apparently the same disease. In the whole of the Austrian dominions, the mysterious way in which the feathered tribes perished caused a great sensation, especially among the breeders of poultry.

At Pressburg, in Hungary, pigeons and sparrows were found dead during the cholera, and in many comitats an epizooty among hens and ducks reigned. In one preserve, belonging to Count Zichy, a hundred pheasants perished.¹ At Grosmeseritsch, in Moravia and Silesia, it was remarked

¹ (Esterreich. Méd. Jahrbuch, vol. xvii. p. 442.

that all the birds left the country during the cholera. In the spring of 1831, before the epidemic appeared, in many villages of Gröding, the hens, ducks, and geese were seized with an unknown disease. They were suddenly attacked, withdrew themselves from the others, grew dull, did not eat, and the head drooped, became blue, and soon they died. At Klobank the epizooty was noticed in the months of February and March, among hens and pigeons, and more rarely in turkeys. 'The hens ate with avidity, but when attacked with the disease they went away, sought out hidden places, and in a quarter of an hour they were dead; the pigeons descended from the roofs to feed on the ground, and fell dead beside their food. There was nothing found in their bodies, except a slight inflammation of the stomach and intestines.' In other places the hens, guinea-fowl, and ducks died with vomiting, profuse diarrhoea, vertigo, and blueness of the crest. At Kremsir the pheasants and the partridges died in great numbers from cholera; and in the district of Znaym the epizooty was remarked among ducks, geese, hens, turkeys, and pigeons, fully fifteen days before the arrival of the cholera. In the hens and turkeys the liver and gall-bladder were found greatly enlarged. At Knöwitz, Teseram, Lodwitz, and Marschowitz the mortality among the hens and geese was noted some time before the arrival of the cholera in man; the disease was so very acute, that death often took place in a few minutes. In Bohemia similar symptoms were observed among the geese, hens, and guinea-fowl. In Lower Austria like observations were made, and it was particularly observed that the sparrows, magpies, and jackdaws had left the country a few days before cholera appeared at Vienna. Dr. Schiffner saw many sparrows seized with convulsions, and fall dead among the trees.¹ At Berlin and the surrounding districts, hens and pigeons frequently died suddenly. The air seemed very still and quiet, owing to the absence of the sparrows and song-birds. At Dresden hens and pigeons sought the corners of their pens, became heavy and dull, drooped their heads, purged masses of a green gelatinous nature, had convulsions of the extremities,

¹ (Esterreich. Méd. Jahrbuch, vol. xvii.

became cold, and the crests were blue ; the greater part of their numbers died in twelve hours after being attacked.¹ At Hamburg, Buchheister witnessed a great mortality among fowls four weeks before the arrival of the human plague. They refused food, had diarrhœa, and, convulsions setting in, they perished in twelve or twenty-four hours after showing the earliest symptoms. So deadly was the disease that many breeders of geese, in fifteen days, out of sixty of these birds, would only have four left.² ‘The disease (cholera) attacked dogs, cats, ducks, hens, and hares ; dead fishes also floated in great quantities to the shore. It was astonishing how rapidly putrefaction attacked anything made of flesh—or even flesh itself.’³

An epizoöty among fowls was also seen in the neighbourhood of Muret, Upper Garonne, France.⁴ In Saxony the diseases among animals, as described by Prinz, appear to have had some interesting features. ‘The prevailing condition among domestic animals, due to the morbid atmospheric influences, continued from the preceding till this year, and maintained itself in all its virulency until the month of August. It was described as of an inflammatory bilious character, and was general ; inasmuch as it was manifest even in the simple irritative fevers accompanying wounds. This condition was most palpable in the diseases of horses : beginning with a tendency to biliousness, often merging into bilious diarrhœa, and increasing to inflammation of the liver, with bilious fever ; and, lastly, ending in remittent typhus fever, with great tendency to relapse. To this bilious constitution was often added inflammation of the throat, lungs, and intestines, and also, from external causes, violent hoof and joint inflammations. This character was noticeable in the diseases of the other domestic animals, though less violent and general. Among dogs here and there, there was malignant mouth disease, and in one case yellow fever. From the month of August the

¹ *Radius*. Mittheilungen, vol. iv. p. 68.

² *Buchheister*. Erfahr. über p. Cholera in Hamburg, p. 9.

³ *Radius*. Op. cit. p. 22.

⁴ *Journal de Méd. Vétér.* Théor. et Pract. vol. vi.

gastric symptoms in fevers gradually disappeared, and from October these were nearly all of a catarrhal and rheumatic type. It is true that very many horses in Dresden and its neighbourhood were treated for the above-mentioned bilious and inflammatory fevers, but nowhere in large stables; and hence they never assumed the proportions of an epizooty. On the other hand, in the kingdom of Prussia, and in the Prussian dominions of Saxony, similar maladies were prevalent in the cavalry stables, and were sometimes known as "horse-influenza," at others as chest disease (*brust-seuche*). There was no general disease among cattle in Saxony, except in two instances, when lung disease broke out in two stables, but this was clearly attributable to local causes. In other neighbourhoods of Saxony than that of Dresden, foot-rot, unaccompanied by fever, appeared among sheep in the summer and autumn. In the neighbourhood of Leipsic, an erysipelatous eruption was noticeable on the skins of young sheep, but these diseases, in all probability, were due more to wet than to any other circumstance. Among dogs a rheumatic catarrhal fever was very rife, and kept pace with the influenza (of man). They were at the commencement very weary, and so weak that they could scarcely walk; they had vomiting, diarrhœa, and fever. To these symptoms were added signs of pain; they uttered doleful cries, and showed uneasiness with more or less lameness. The malady was nevertheless not dangerous, and only after the disappearance of the fever were the rheumatic symptoms obstinate.' After stating that fowls and pigeons suffered from a malady similar to that already described, and that a like affection had been noticed among hares, he adds: 'A mortality among hares, like that reported from Bohemia, was wide-spread here in the months of October and November; it appeared to be a general inflammation of the intestines. Only the young animals were affected, and the bad weather had, no doubt, much to do in inducing it. For the same reason, a remarkable mortality broke out among house-swallows.'¹

¹ *Prinz*. Krankheitsconstitution unter den hausthieren in Sachsen. *Radius*. Mittheilungen, vol. iv. p. 67.

The following statement, referring to this period and this kingdom, is also made with regard to Germany :

‘ From the month of March, and during the whole spring and summer months of 1831, influenza among horses and dogs appeared, accompanied sometimes with gastric, sometimes with typhoid complications. A disease among fowls with symptoms of great swelling of the head, and vomiting of a greenish-white fluid, is here noticed. The crop being greatly distended with fluid, and seeing the inutility of other remedies, the author, with a bistoury, made an incision in the crop an inch in length, and evacuated the contents. Those fowls which were not yet too far gone, rallied and fully recovered within twenty-four hours after this treatment. In October, November, and December, 1831, and January and February, 1832, cholera raged among dogs, cats, and rabbits in various degrees of intensity. Violent bilious vomiting, and dysentery, also of a bilious character, were prevalent. Both these affections were accompanied by severe muscular contractions, and there was loss of sensation and animal heat ; and the creatures showed by their dull eyes and reeling gait great weakness. The hair was harsh and dry ; the urine was dark coloured and ropy ; from the nose flowed a purulent discharge ; the tongue was covered with foul mucus ; and the hairless parts of the body, as well as the mouth and gums, were of a striking yellowish hue. There was no fever present. In those cases where the disease was in a milder form, the animals remained more sensitive to external impressions, and a favourable result of the treatment was anticipated. But where the malady assumed a more serious character, the animal lost all sense and feeling, paid no attention to anything, and was even indifferent to surgical operations. The heart and pulse could then be scarcely perceived moving. If they survived twenty-four hours, and the warmth returned, they were generally saved, but the course of the affection was often so acute that they died within eight or twelve hours. More especially was this noticeable when—as in the case of old dogs, a post-mortem revealed chronic disease of the lungs or liver. Out of twenty-eight dogs attacked, twenty were

cured. (Cats were also affected; out of eight, three only recovered.) My children had sixteen rabbits, of which ten died within two or three days. I could not notice in them the symptoms and course of the disease, as my children told me they were healthy and dead within two or three hours. In two days the brain and spinal marrow were much softened and almost fluid; in the plexus of the brain there was extravasation of blood. The heart was flabby, and its muscular substance discoloured; the ventricles were remarkably dilated, and the presence of a more lymph than blood-like substance indicated an obstruction to the circulation. A similar condition was noted in the portal system of vessels; the texture of the lungs was soft and pale in colour, and the bronchial tubes were filled with a sanguinolent mucus. The gall-bladder was empty; the liver and spleen were gangrenous, and there were detached inflammatory patches in the small intestines. On examination of two cats and three rabbits, I found analogous symptoms; fowls also showed the same appearances, with the exception of the intestinal inflammations, which were absent. It was remarkable that all the dogs and cats I had to treat were house or pet animals. I had no cases among watch, butcher's, or sporting dogs. I am inclined to think, from the disordered condition of the pulmonary and portal circulations, and the tendency to putridity of the animal juices, that the disease affecting these creatures must be similar to the anthrax class of maladies. I do not believe that this cholera of animals was infectious or contagious; inasmuch as many of the dogs and cats brought to my place came in contact with my dog and cats, and yet these did not suffer.'¹

For Courland, we find some very important facts recorded, having reference to the diseases in other countries, and also as informing us again of the appearance of the Cattle Plague beyond its native land. The remarks are to the following effect:

'Sporting friends of the writer notice that there was a smaller number of hares in the district than in the previous

¹*Böhme. Beobacht. über die Cholera der thiere. Radians. Mittheilungen, vol. iv. p. 17.*

year ; but on the other hand, the partridges, which had some time before nearly all disappeared, were now far more plentiful. . . . The year 1831 was a highly favourable year for cattle, inasmuch as the entire loss in Courland did not exceed 567 head of horned stock—very different to 1829, when 1504 horses, 5784 cattle, 11,337 sheep, 345 swine, and 150 goats died from the rinderpest, and from a putrid fever arising from insufficient and bad fodder. The usual maladies only in two places assumed an epizootic character in 1831. In seven districts there was no particular affection, and only in three districts was there anything of a real epizootic malady. In July, on a private estate, and during the prevalence of the east wind, and a thick, yellowish, badly-smelling fog, there broke out an epizooty among the herds which were in the most excellent condition. The able Veterinarian Adolphi describes the disease as a very rapid inflammatory fever, with inflammation of the heart, which could only be overcome by very free blood-letting. Seventy were saved in this way, but the first twenty-four which were not so energetically treated were lost. On another estate in the same locality, and about the same time, appeared a typhoid lung disease among the cattle, attended with exudations of lymph, and which was so destructive that eighty-two died. The cause of it most probably was due to the animals drinking from a pond which had not been cleansed for twenty years, and the water of which was like a solution of verdigris. In the third district, in the beginning of June a herd of one hundred cattle was attacked with splenic apoplexy, and in a week twenty-five had perished. The only cattle epizooty of any importance in this year was again the rinderpest (*Loserdürre*), which broke out in these three districts. It was undoubtedly imported from the district of Dunaburg in the government of Witepsk, which is only separated by the river Duna from this neighbourhood, and where it raged with great violence. The scarcity of mad dogs was noticed in this year. . . . A mad wolf caused great destruction in a village, in consequence of which four men and many domestic animals died of hydrophobia.¹

¹ *Hering.* Hamburg. Magazin für die Ausl. Literat. d. heilk. vol. xxvi.

In Westphalia, prolapsus of the uterus and vagina, and inflammation of the former were very frequent among milch cows, consequent, it was supposed, upon the use of innutritious fodder. The same occurrences were observed among goats, and abortions were unusually numerous; in one instance, in a herd of two hundred, no fewer than thirty-one calved before their time. In some places 'rot' was most destructive among sheep; so that often there was not one left out of a flock. The 'trembling disease' was not unfrequent among the animals. Many horses died in consequence of bad forage. In one district, at the beginning of the year, there was a great mortality among young cattle, but without any well-defined disease being present; it was chiefly, if not altogether, due to the scarcity of herbage on the uplands, and the animals having to be fed in low marshy situations. Fowls suffered very much in the district of Höxter, and Dr. Seiler imagined that the malady which carried off so many, bore a great resemblance to the cholera.¹

An epizooty is again recorded as occurring among the wild animals in the island of Ceylon, previous to an outbreak of cholera. 'Spasmodic cholera is an epidemic that has at different periods made fearful havoc in the island.' In 1832, it raged fearfully, and 'in the preceding year, a vast number of elephants and other wild animals had been carried off by an epidemic which did not affect people. The natives account for this by a belief that sickness among wild animals and cattle generally precedes, by a year, any pestilence amongst the population of the country.'² 'In October, 1831, elephants, wild hogs, and deer died in great numbers in this forest (Nalandie), and the mortality extended to Minneria, and other parts of the adjacent district; but the inhabitants were not affected. There was neither scarcity of water nor any apparent cause for this plague amongst the wild animals, but it is remarkable that in the same month of the following year (1832), Trinkomalee was visited by that awful scourge, the spasmodic cholera.'³

¹ Sanitätsbericht des Med. Colleg. zu Munster, 1831.

² C. Pridham. Ceylon and its Dependencies, vol. ii. p. 693.

³ Forbes. Eleven Years in Ceylon, vol. i. p. 397, ii. p. 43.

There was a great death among rooks in Ireland. The shores of Lough Neagh were afterwards covered with their skulls and bones. It is supposed that during a dense fog that lasted for some days and nights, multitudes of these birds perished in the waters of the lough and were afterwards washed ashore.¹

A.D. 1832. Asiatic cholera raging in England, Ireland, and Scotland, and also in France, some parts of Germany, and Holland. The lower animals yet appear to have suffered from some mysterious influences in those places where this terrible epidemic was most fatal. At Paris, in a garden, twenty-five out of twenty-six rabbits died in the space of fifty hours.² In the lakes and ponds of Marais and Marcoussis, at Bâville, at Fontenay-les-Brie, in a great number of ponds and small streams in the valleys of Dourdan and Arpajon, from the end of 1831 to the beginning of April, 1832, M. Clément Desormes observed a very fatal epizoöty among the carp. Their spinal cord was found in a state of great congestion.³

At Breslau, M. Otto thought he had observed the infection of some animals with cholera from people who were ill of that disease. In one instance two pigs had eaten the evacuations of a cholera patient, and died with very similar symptoms; they were attempted to be bled; but this was impossible, as there was no blood in the vein. In another instance, a dog had lain in the bed of its master, who was ill from cholera, and had licked up the matter vomited by him. The second day after, it was seized with illness, had vomiting, diarrhœa and convulsions, and died. The autopsy revealed similar morbid changes to those observed in man.⁴ The feathered tribes were again affected with peculiar epizoötic diseases, and died in large numbers. Carrere says: 'During the disastrous progress of cholera in Paris, the village of Choisi-le-Roi, while perfectly free from the epidemic, was the scene of an epizoötic

¹ *R. Patterson.* Introduction to Zoology, p. 356. *Thompson.* Natural History of Ireland, vol. i. p. 320.

² *Caffé.* Journal Univ. et Hebdom., 1832.

³ *Desormes.* Gazette Méd. de Paris, 1832.

⁴ *Otto.* Rust's Magazin, vol. xxxvi. p. 298.

disease, of which domestic poultry were the only victims. In the history of many other epidemics we find coincidences of this description of peculiar diseases affecting the lower animals, while pestilences were decimating mankind. Sometimes horned cattle, at other times horses, have been especially attacked; but there have not been recorded more than two or three examples of epizootics among birds. Chabert and Boronio, it is true, have described some diseases of birds, observed in France and Lombardy; but the characters of the affections they describe are totally different from those observed at Choisi.

‘The cholera had scarcely appeared at Paris when it was generally reported that a disease, accompanied with most destructive mortality, was raging among the poultry throughout the commune. Here, as at Paris, the cry of “poisoning” was loudly made; all persons who were persuaded that the food and drink of mankind were mixed with poison, found no difficulty in convincing themselves that similar villainy was practised in the poultry-yards. But the mortality soon reached such a pitch, that this idea was abandoned; and then it was generally reported that the cholera was the cause of the epizooty.

‘Wishing to arrive at the source of these rumours, I learned that since the 3rd of April a vast number of fowls had perished in several houses situated in different quarters of the hamlet. During the first days of the disease, the number of deaths had been very considerable, after which period the birds were killed by the owners on the occurrence of the first symptoms. In one fowl-yard, of eighty attacked, one or two alone recovered. Many remedies, amongst others, bleeding under the wings, had been in vain resorted to. A considerable quantity of the diseased fowl had been eaten by the inhabitants without any bad effect.

‘The causes of this malady appear to me altogether unknown, and I saw no reason for supposing it to be contagious. Nevertheless, when a single death occurred in a fowl-yard, the mortality only ceased when it had no more victims to destroy. The most cleanly poultry-feeders suffered as severely as the

most filthy. The nature of their food had no influence on the disease. The fowls at large in the streets of Choisi were attacked with equal severity with those perpetually confined, or occupied in incubation. Rabbits, geese, and ducks, however, lived with impunity in the same yards where the hens were universally perishing, and three turkeys only were affected.

‘ The disease, generally speaking, commenced in the morning. The hens were noticed to be dull and weak, their wings drooping, and their crops distended with undigested food. In a few cases the disease commenced during the day, and lasted four-and-twenty hours. The respiration was short and hurried, the motions of the heart accelerated, and diminished in force in proportion to their increase of velocity. In almost every instance there had been numerous whitish liquid dejections. The gullet was distended with thready mucus, which escaped from the beak. The combs were of a livid-red colour, and the tint deepened to a violet as death drew near. After the disease had lasted from two to five hours, convulsions usually finished the sufferings of the animal, and death was rapid in proportion to the quantity of the evacuations. In many cases I have learned that the coldness of the sick birds was very remarkable. A few recoveries were noticed towards the termination of the epizootic. So far as I can discover, about five hundred fowls died of the disease, or were killed in consequence of the development of its symptoms. After death the colour of the skin was the same as in fowls strangled without being bled. The bodies were warm for at least three hours, and the cadaveric rigidity was very remarkable. I have taken much pains in seeking for any pathological alterations which might explain the cause of the disease, but my researches were quite in vain. The brain was white, and free from congestion. The heart was bloodless, and of its usual consistence. The aorta contained little fluid blood. The lungs were rosy and crepitating. The mucous membrane of the œsophagus frequently showed little papilla. The crop always contained food ; the gizzard was strongly contracted ; the intestine presented occasional patches of red, especially in the situations where little parcels of worms were found. The

liver was gorged with black and tarry blood ; the gall-bladder distended with thick green bile. This epizoöty is quite different from the 'maladie charbonneuse' of Chabert, and from that described by Boronio. Neither has it any analogy to the "pip," for the tongue was always in a natural state.'¹

The accomplished veterinarian, Grogner, describes a similar disease among the poultry in the department of Ain, Lyons. 'The disease broke out at Monthuel, and after lasting about twenty days, with more or less gravity, it disappeared on my arrival ; at least, I could not discover any trace of it. From what I was able to gather in this time, it had destroyed from two hundred and fifty to three hundred fowls at Monthuel. I was informed that it was at Beligneux, a commune about two short leagues from this town, and I therefore went there the next day and saw the disease. These are its symptoms : the sick fowl lost its vivacity, and rocked itself ; it could easily be caught ; refused its food ; kept near the water-trough and drank much ; sought the sun's rays for warmth, and only left them to seek for drink. If many were sick they all collected and huddled themselves into groups, the one fowl resting on the other ; they drooped their wings, and shook them in a convulsive manner. Sometimes they wheeled round, as if attacked by vertigo ; at last they remained unmovable, closed their eyes as if going to sleep, fell down and died. Towards their last moments their crests were wasted, assumed a violet tint interspersed with black stains, and became cold. Some fowls rejected by the beak and the anus a mucous matter of a yellowish-white colour. Fowls have been observed to die at two or three o'clock in the day, which, in the morning, had eaten, crowed, and laid eggs. When the sick birds lived beyond twenty-four hours, there were many chances in their favour as to recovery. A necropsy showed, in addition to the withered crest with its parti-coloured violet and black hue, blue or black patches on the skin. The mouth was filled with whitish mucosities, and sometimes at its posterior part showed traces of inflammation, or some white pimples about the size of a pin's head, about there and on the mucous

¹ *Carrere*. Journal Hebdomadaire. Lancet, July 7, 1832.

membrane of the œsophagus and the crop, which was very full. The mucous membrane of the intestines was thickened and slightly inflamed. The digestive canal, and particularly the two cæcums, contained a thick mucosity of a yellowish-white tinge, but without a bad odour. The gizzard was hard and of a greenish-yellow colour. The mesentery and the omentum were injected, arborized, or streaked like marble, and had a yellow tint. The fat was always yellow, as in old fowls. There was nothing particular to be noted in the oviducts. The liver was double its natural size, and black, as if half roasted. The gall-bladder was dilated, and contained dark-coloured bile. The whole of the blood was black, arterial as well as venous. The organs in the thorax were in a natural state, and there was no sign of putrefaction twenty-four hours after death. The disease had begun at Beligneux, a little before it was seen at Monthcul, and it had extended about the same time in the neighbouring communes, such as Bressoles, Saint Christophe, and Dagneux. It was remarked that the best-maintained hen-houses were no more spared than the others, and those which drank out of pools or ponds suffered no more than they which had clear limpid water to drink. The quality of the aliment had not, apparently, any influence in producing it, and its cause remains a mystery. There is nothing to prove its contagious properties. . . . I am inclined to consider as identical with the epizootics of Beligneux and De Choisy, the affection I observed at St. Georges-le-Rencin, in the district of Villefranche. It had reigned there for about a month without exciting much uneasiness, when I arrived on the 10th of the current month (June?); it had been recognised by Dr. Volpré and Veterinary Surgeon Gayot. We have noted the following symptoms: the walk unsteady; little resistance shown when attempted to be caught; the crest pendant and shrivelled; the eyes dull; the mucous membranes white and dotted with granulations; the belly hot, distended, and fluctuating, so that it was easy to recognise ascites. The sick fowl walked slowly. We have seen hens which had been ill for three weeks, and which during that time either had not laid any eggs, or had produced them

without shells. Diarrhœa was persistent, and the dejections had the appearance of lime-water. The post-mortem appearances were the following: the skin was white and the muscles wasted; the mucous membrane of the mouth and the œsophagus covered with miliary granulations; the crop was nearly always empty; the abdominal muscles and the peritoneum were livid or violet-coloured. When the abdomen was opened, there escaped a large quantity of thick viscid fluid of a yellowish hue. In one fowl at least a pint was calculated to have been present in the abdomen. The intestines were full of a greyish or black fœtid mucus, but there were no traces of inflammation, nothing save some miliary granulations; the gizzard presented no particular alterations, and the liver was normal. The poultry-yards were in general damp and badly kept. . . . M. Robert, physician at Marseilles, has written to Dr. Gaultier of Lyons, under date of the 12th of April, informing him that there was an epizooty among fowls on the borders of the Mediterranean, which was characterized by diarrhœa, and the vomiting of glairy matter, accompanied by cramps and soon terminating in death. . . . The political journals have lately told us, that, in some villages in the neighbourhood of Burgos in Spain, there reigned a mortality among poultry, and that in order to preserve the healthy from this contagion, they have found no better means than to kill all the diseased or suspected.¹ In many places in Lower Brittany nearly the whole of the poultry died.² Mayer witnessed a disease at St. Petersburg similar to that seen among the fowls at Choisy, while at the same time sporadic cases of cholera were appearing in mankind; and in the province of Mantua, according to Dr. Bignani, an extraordinary quantity of young poultry died. After death the liver was found acutely inflamed, and to this was attributed the symptoms observed during life; young ducks perished in great numbers.³

In April, 1832, M. Guyon observed a great mortality

¹ *Grogner*. Recueil de Méd. Vétér. prat. vol. ix. p. 246.

² *Maout*. Expériences sur le Miasme du Choléra, p. 17.

³ *Æsterreich*. Med. Jahrbuch, vol. xi. p. 20.

amongst poultry at No. 264, Rue Saint Jacques, Paris. They died from a disease which, according to his description of the symptoms and lesions, is designated as the cholera of fowls¹—a malady particularly well-known to French veterinary surgeons.

In France, an anthrax fever (*fièvre charbonneuse*) caused much havoc among the cattle in the department of Tarn.² Nothing very worthy of note was recorded for Central Europe. In Posen the crops, especially the early seeds, were a month behind their time. In May and June the weather was very unfavourable to vegetation, though it greatly injured the vermin inimical to agriculture. In June the crops looked so bad that great apprehensions were entertained for the harvest, and the cold and rains of July and August much retarded the growth of the hay and rye. The field and garden fruits were not damaged by the weather, but appeared to be rather benefited by it, as the trees were long and full in bloom, and bore much fruit. The vines did not blossom before the end of June, although their usual time to do so is in the beginning of that month, and all flowers were a month later than in ordinary seasons. Game was plentiful, and domestic fowls were thriving. The may-bug appeared in immense numbers in May, and in Hesse, invasions of caterpillars were frequent, while the '*Bombyx processionea*' covered the pine forests. The Cattle Plague was raging. Madness was rather common among dogs, and hydrophobia in mankind. Seventeen persons died from this disease in the one province, and the same malady was extremely rife among cattle. Sheep-pox could not be got rid of in the province, so long as the yearly inoculation of the lambs with cultivated lymph was neglected. The disease occurred at all times and in all districts, and caused very great damage among the flocks. In the second quarter of the year rot, complicated with dropsy, was prevalent among cattle and sheep; their lungs and livers were found to be diseased, and contained cysts with numerous hydatids in them. This disease was in some localities supposed to be

¹ Recueil de Méd. Vétér. fifth series, vol. iii. p. 210.

² Pradal. Observations sur la Maladie régnante des Bestiaux. Castres, 1832.

caused by the bad forage, and damp and rainy weather ; but in other localities the flocks best attended to perished ; so that it appeared as if some miasma was diffused in the atmosphere. The devastation was enormous, whole flocks being swept away. In some instances neither dropsy nor hydatids were present ; but a peculiar friability of the parenchyma of the internal organs, especially of the liver and heart, and ulcers in the intestines, were frequently noticed. The animals which showed an inclination to eat until shortly before death, consumed the black earth.¹ In Pomerania a similar atmospheric constitution was observed, and caterpillars did great damage. Cholera was present in mankind. Catarrh and rheumatism, glanders and mange, were diseases more than ordinarily noticed among horses. Among sheep, foot disease, small-pox, and dysentery were prevalent, but typhoid lung affections were most destructive. Veterinary Surgeon Tegge reported the breaking out of influenza among horses. The symptoms were : refusal of food ; great thirst ; dulness and fever ; pulse quick, but small ; heart-beats very perceptible ; the respiration quickened ; an oppressive cough ; in some cases colicky pains ; diarrhœa and borborygmi. Where this was not present the fæces were in small round pellets and covered with mucus. Not unfrequently the lungs were implicated, and then the animals did not lie down, but stood away from the manger with drooping heads and widely separated fore-legs. They coughed or groaned on the slightest movement, and more especially when they tried to drink. Their walk was languid and tottering. In the majority of those affected the functions of the liver were deranged ; the tongue was covered with a dirty yellow mucus ; the mouth contained much ropy saliva, and its lining membrane was pale ; the temperature of the body was increased, and the breath foul-smelling. All these symptoms indicated an affection of the liver ; a fact which was substantiated on a post-mortem examination, when that organ was found considerably enlarged and friable. It was named a 'typhoid lung-and-liver inflammation,' or influenza. The causes were surmised to be

¹ Sanitätsbericht die Provinz Posen, 1832.

bad hay, and the wet and cold weather of the summer and autumn. Raphania in pigs was witnessed by Dr. Helm: 'Twelve pigs of various ages were fed with rye which contained much ergot. A few hours afterwards convulsions set in, with foaming at the mouth; the animals grunted and groaned most piteously; became paralyzed in the hinder extremities, and expressed their agony in the strangest contortions. At first I presumed the disease arose from the bite of a mad dog, but on opening the first animal that died I discovered the nature of the malady, by finding in the stomach much ergoted rye. The jaws were so tightly closed, that with great difficulty a purge of white hellebore was introduced, and this was followed by a dose of vinegar and buttermilk, and repeated douches of very cold water. By these means seven of the animals were saved. The other five died in the course of a few days.'¹ In Westphalia contagious and cruptive diseases were frequent among dogs. In several horses in one locality diabetes followed the giving them musty hay and oats. Glanders was prevalent among horses, as well as typhus or nervous fever; pneumonia, and gastric fever were epizoötic. Small-pox (*blattern*) showed itself among pigs.

Rot among sheep caused much loss.²

In the Grand Duchy of the Lower Rhine, the early and warm spring caused the horses to shed their coats prematurely, and cold setting in, they suffered much from the changeable weather which followed.

Abortion and retention of the placenta were remarkably common among cattle, and puerperal fever was not infrequent. The weather was bad for forage, and horses, besides catarrhal and rheumatic affections, had diabetes and derangements of the digestive organs. Hæmaturia was enzoötic among those cattle which were pastured in the woods and swamps in the month of June. The 'milzbrand' was also rather prevalent.³

In Saxony, rabies was unusually common among dogs, and

¹ Provinzial-Sanitätsbericht von Pommern, 1832.

² Sanitätsbericht des Med. Colleg. zu Münster, 1832.

³ Generalbericht des Rheinischen Med. Colleg., 1832.

many cattle and men were bitten, but there were no deaths among them. Geese were seized with a deadly disease, supposed to be caused by flies getting into their ears. These insects were swarming about for several days, just as they are in foreign countries before or at the outbreak of cholera. Horses in one district had inflammation of the liver, with secondary inflammation of the brain.

In Lombardy, pneumonia, glossanthrax, and inflammatory fever or anthrax were epizoötic among cattle. In Mantua, in the month of August, many hens and ducks died from an acute inflammation of the liver.

In the spring of 1832 there were various rumours of a strange epizoöty having shown itself among the domestic animals in Britain, but especially in Scotland, where the cholera was very severe in the human species. It appears to have differed in its symptoms and in its more rapidly fatal terminations, from the 'influenza' so-called, and even the unlearned could distinguish this peculiarity. 'In the thriving village of Denny (Stirling) a disease has made its appearance among the horses, which has already proved distressingly fatal. The first case occurred on Monday, and before evening several valuable animals had become affected. We have not heard exactly how the malady operates; but after severe suffering, the poor horses generally die in about five hours. The farriers say that the cause of death is violent inflammation of the bowels; while the less learned declare it to be *horse cholera*. In all, there have been seven cases and five deaths.'¹ Professor Dick, of Edinburgh, has described some extremely interesting cases of a class which, he informs us, was numerous. In alluding to the symptoms of cholera in man, he says: 'Now I have stated that herbivorous animals are sometimes cut off in a similar manner. It is no unusual thing for a horse to be brought to a veterinary surgeon in the most intense agony. He has, perhaps, been seized within half an hour or an hour; he can scarcely be kept upon his legs a moment; he tosses himself down wherever he is for a few seconds allowed to stand; knocks his head against the

¹ Caledonian Mercury. Veterinarian, vol. v. p. 218, 1832.

wall or whatever comes in his way, as if, from the intensity of the agony under which he then suffers, he cared not for any other injury ; a cold sweat runs from every pore ; his eye is fixed, sunk, and glassy ; his limbs are convulsed ; he sobs, or rather snorts ; and a few more convulsive spasms terminate his existence. In others the progress is not so rapid ; perhaps the disease, instead of lasting only two or three hours, may, although rarely, continue during as many days. . . . On examining a severe case of this kind, it is found that the pulse is perhaps raised to 80, 90, or above 100 ; it is small and thready, and scarcely to be distinguished in the arteries, while at the heart it may sometimes be distinctly felt. The mouth is generally colder than natural—either dry, with white, furred tongue, or filled with a frothy mucus. But there is little time to spare in examination : the animal throws himself to the ground, and continues to toss about, or frequently rising and lying down again, until relieved in some way or another. If the extremities are felt, they are cold to the touch, and the tips of the ears are not less so ; but the extremities are not only cold, but they have become remarkably *fine* or shrunk. Convulsive spasms soon take place, and he dies. On examination after death, we find there is a great determination of blood to the deeper-seated parts ; they are highly inflamed, and the vessels injected with blood. These symptoms and appearances vary, however, according to the *rapidity* of the disease. The epizootic which at present rages has a somewhat curious character. It has been much less destructive than is generally the case with diseases of the bowels, while, at the same time, it presents various modifications. The most conspicuous, and that to which I would more especially direct attention, is diarrhœa, which is now very prevalent. This is the more remarkable, because that complaint in horses is extremely rare.'

The post-mortem appearances of an animal that had been opened immediately after death were as follows : ' The abdominal viscera presented little appearance of disease ; the stomach was about two-thirds filled with food, but offered no particular morbid appearance ; the mesenteric veins were

turgid with black blood ; the villous coat of the colon had an inflamed appearance, but not well marked ; the small intestines contained a yellowish-like mucous fluid, while the large intestines had within them a dark-blue, clay-like, thin fluid, with a most disagreeable odour. The bladder was contracted and empty ; the lungs were pale, and rather of a healthy appearance, and the ventricles and auricles of the heart were empty of blood. The brain was not examined.'

Cows were also very subject to attacks of diarrhœa, and many died. Coagulated lymph formed a great portion of what was discharged. In some, purging first appeared ; in others, cramps of the legs. 'What the cause or causes are, I am unable to explain ; but if, in addition to what I have already offered, as indicating a long continuance of a peculiar atmospherical influence, we consider the general state of the weather and atmosphere for these two seasons past, the extraordinary brilliancy and frequency of the aurora borealis, and also the following facts : that during the prevalence of the disease of the mucous membrane of the respiratory organs in the horse it was observed by Mr. Stevenson, of Redside, near North Berwick, whose horses were almost all affected, that (as he states in a letter to me, dated 6th May, 1831) "it was a curious fact, that *before* the thunder upon Tuesday the black mare's and brown horse's (two which died) pulses rose above 100, but after the storm their pulses again fell as low as 70 ; all the rest of their pulses (the horses which were unwell) were affected in the same manner." . . . I may also add that some time prior to the commencement of the disease at Musselburgh the sea had for several days been observed to be highly phosphorescent, or "on fire," as the natives of the place emphatically expressed it ; all of which seemed to prove a peculiar state of the atmosphere.'¹

In the public papers the following strange paragraph was circulated : '*Disease amongst Race-horses.*—For some time past a disease of an inflammatory, and apparently also of a contagious nature, has shown itself amongst all descriptions of horses. The training stables of Mr. Scott, at Malton, York-

¹ *W. Dick.* The Veterinarian, vol. vi. p. 207.

shire, have been particularly unfortunate. Beaufort, a St. Leger horse, belonging to the Hon. E. Petre, died about a week ago. George Walker, Esq., whose horses are trained by Scott, has lost three. Mr. Bower has also lost a colt, by Figaro, out of Chancellor's dam ; the value of these five horses cannot be estimated at less than £4000. Mr. Walker has also lost seven valuable cart-horses by this strange disorder. In all the fatal cases death has ensued within forty-eight hours ; and on opening the bodies a quantity of water has been found about the heart. If the complaint should reach Newmarket, the mischief will probably be very extensive, as there are now five or six hundred horses in training there, besides brood mares, yearlings, foals, etc.' To this the editor of the '*Veterinarian*' adds : 'There has been for some months past an unusual mortality among horses, in almost every part of the kingdom, although we cannot say that many cases bearing any resemblance to these have fallen under our notice. The epidemics which occasionally prevail, so different in different years and different localities, form a very important and utterly neglected subject of inquiry. . . . Affections of the mucous membrane of the intestinal canal have lately been almost unprecedentedly frequent and fatal among dogs ; and there has been a peculiarity in the character and copiousness of the bloody discharge, and rapid prostration of strength, and speedy death, to which our experience supplies us with no parallel.'¹ That cattle were not exempt from a like morbid influence the following communication from Mr. Mayer, of Newcastle-under-Lyne, will testify : 'During the months of August, September, and October last year, the English cholera prevailed amongst human beings, as an epidemic, to a greater extent, and with a greater fatality, than ever was known ; at the same time horses and cattle, and particularly the latter, were attacked with bowel affections, to a degree I had never before witnessed ; so that I consider (so far as atmospheric influence goes) we have been rather severely scourged with cholera ; but Heaven forbid that the whole island should be visited with the Asiatic cholera, with all the

¹ The *Veterinarian*, vol. v. p. 222.

malignant features that have hitherto marked its progress. The first extreme cases which were brought under my notice occurred at a lay in Cheshire, where ten or twelve head of cattle had already died, and three or four others were considered hopeless. There were several other slighter cases, in which the animals recovered when a proper treatment was adopted, and the diseased cattle were separated from the healthy ones. The disease was ushered in by a dull, anxious appearance, and the eyelids and dewlaps were of a yellow tinge ; in dairy cows there was a total suspension of the secretion of milk ; a slight muco-purulent discharge from the nostrils was observed ; the appetite was indifferent, bowels costive, the dung of a dark colour, having portions of blood diffused through it ; but the urine was not much affected. The pulse, for the first twenty-four or forty hours, when the disease came on more gradually, was not much affected ; but afterwards it became frequent, small, and hard, beating at the rate of 70 or 80 pulsations per minute. In extreme cases, the febrile action set in from the first, accompanied with violent diarrhœa and tenesmus ; the fæcal discharge being intolerably offensive, and consisting of a thin, watery, dirty, green-coloured fluid, full of shreds of coagulable lymph and blood, with, comparatively speaking, no portion of fæces along with it. The extremities were alternately hot and cold ; the surface of the nose sometimes dry, at others having a dew upon it ; occasionally during the cold fit the eyes would become sunk in their orbits, the features collapsed, the nose, inner parts of the lips, and tongue, of a deadly pallidness, which would be followed up by reaction, and a consequent hot fit again. The bowels were affected, in some of the extreme cases with colicky pains ; and in every case there was obstinate constipation and obstruction in the second and third stomachs. If relief was not afforded, the disease terminated fatally on the third or fourth day. The causes appeared to be great atmospheric changes, accompanied with much moisture operating upon a frame already predisposed by living on bad fodder. The morbid appearances which presented themselves after death were violent inflammation

of the mucous membrane of the stomach and bowels, particularly that portion lining the colon and rectum ; presenting, in some cases, quite a dark-crimson hue. The second and third stomachs, particularly the manyplus, were quite blocked up with vegetable matter, consolidated and hardened to such a degree as to require the force of a hatchet to cut it in two ; in fact, it was as dry and hard as if baked in an oven. The gall-bladder was completely gorged with bile.¹

Glanders was epizootic amongst horses in Holland.²

An epizooty among cats at Aleppo. The Rev. Vere Monro, during his residence in that city in 1833, when describing a large establishment founded there for the reception of these creatures, remarks : ' They had amounted to five hundred, but the plague in the previous year had reduced their number to two hundred.'³

A.D. 1833. Epidemic influenza was again prevalent in Europe, having travelled from east to west. ' The disease was ushered into London during the prevalence of a bleak wind and a cold vernal atmosphere succeeding to a long, warm, moist winter. Storms of hail, snow, sleet, thunder, and rain, from dark fragments of clouds, were alternated only by currents of gelid air and harsh squalls from the north and north-east. Under these coarse rude flaws of heaven, the pulmonary organs, so susceptible of atmospheric changes, were excited and parched or moistened and depressed, and the whole surface of the skin must have suffered universally in its functions.'⁴ In London, and while the human species was suffering from influenza, horses were affected with the same disease. For a short time those kept in the low districts suffered most, whilst those in the upper and north-west divisions escaped. A few weeks afterwards there was not a stable in Marylebone in which the malady did not appear, and Westminster was exempt from disease. With regard to Marylebone, Mr. Youatt observes : ' I have known it to be

¹ *T. Mayer.* The Veterinarian, vol. v. p. 185.

² *Kirchner.* Magazin für Thierheilkunde, 1865. *Veith.* Handbuch der Veterinarkunde.

³ A Summer Ramble in Syria. London, 1835, vol. ii. p. 235.

⁴ London Medical Gazette, vol. xii.

confined to a district not a furlong square. In one extraordinary case, a fifth part of the horses in certain mews died, while there was no vestige of disease elsewhere. I recollect, that in one of our barracks, the majority of the horses on one side of the yard were attacked by epidemic catarrh, while there was not a sick horse on the other side. These prevalences and these exceptions are altogether unaccountable. The stables and the stable management have been most carefully inquired into in the infected and healthy districts, and no satisfactory difference could be ascertained. One very important fact, however, has been established, namely, that the probability of the disease seemed to be in a tenfold ratio with the number of horses inhabiting a stable. Two or three shut up in a comparatively close stable would escape. Out of thirty distributed through ten or fifteen little stables, not one would be affected ; but in a stable containing ten or twelve, although proportionally larger and more ventilated, the disease would assuredly appear ; and, if it does enter one of the largest stables, almost every horse will be affected.¹ The attacks of this malady appear to have been remarkably sudden. Mr. Wilkinson had thirty-six cases in one day, and another practitioner had nearly twice that number in twenty-four hours.

The epizooty appears to have been also very common throughout England. From Rochdale, for instance, Mr. Hayes writes : 'From October, 1832, to March, 1833, there have been numerous cases in this district of catarrhal fever, joined with inflammation of the lungs, liver, trachea, larynx, and pharynx, and the mucous lining membrane of the bowels ; frequently with all the symptoms of malignant catarrh, and even these in an aggravated form. In some cases there was excessive diarrhoea: the fæces were black, liquid, mucous, and bloody, exceedingly fœtid, and accompanied by such extreme debility that the animal could not move without falling ; there was quick pulse, injected nose, mouth and gums as red and dry as possible, and resembling a piece of lean raw beef. In some there was extensive anasarca ; in others, phlegmonous

¹ The Veterinarian, 1833, p. 117.

tumours in different parts of the body ; in others, again, there were spasmodic jerkings, and lameness in the legs, shoulders, and hips. On the fourth day they generally began to bleed at the nose, a very dark-coloured thin blood, which continued for four or five days, or until the bowels became set ; in some, for about the first two days, the bowels were constipated ; the pellets of dung came enveloped in a thin tissue of the mucous lining of the bowels : this also came in great quantities, whether the fæces were hard or pultaceous. There was total loss of appetite for five or six days ; the temperature of the extremities was irregular, sometimes hot and sometimes cold, and the others warm, and next day it would be just the contrary. . . . Out of one hundred and twenty-six extreme cases, I have only lost four. . . . I attribute the prevalence of this disease to an almost stagnant state of the atmosphere, together with what little winds we have had being almost exclusively from the east, or north-east, of a most foggy, cold, damp kind, and for which these seasons have been so remarkable. . . . Such, indeed, has been the prevalency and destructiveness of the complaint in this district, that very few establishments have been able to continue their works, and this without regard to close, small, large, crowded, ventilated or unventilated stables or situations ; but perhaps the low damp stables, near large waters, felt it most. It has been the same in the country as in the towns, pervading the whole country round for many miles, and in a very aggravated form such as I have seldom met with ; and also affecting *corvs*—chiefly those that gave milk—in a similar manner.’¹

At the Veterinary School near Paris, horses recovering from various maladies were suddenly affected with anorexia, the head heavy and hot, the conjunctivæ red and tearful, dry cough, and great debility. Many horses previously in good health became affected when brought into the neighbourhood of the sick. ‘In the course of the months of May and June last, the time when the disease called *grippe* appeared in the human species over the whole of France, a large portion of the horses convalescent from internal diseases or suffering

¹ The Veterinarian, 1833, p. 192.

from surgical complaints in the College Hospital, have been attacked with a malady which had the greatest analogy to the *grippe*. The loss of appetite, the heaviness and heat of the head, the prostration, the general debility, the heat and dryness of the mouth, the redness of the conjunctival and pituitary membranes, announce the commencement of the disease; at a later period, in addition to these primary symptoms, some of which are persistent and become aggravated, are evinced difficulty in deglutition; an abundant and viscous salivation; a cough unfrequent and dry at first, but afterwards becoming soft and constant, with discharge from the nostrils. In very many cases, it is observed that the great portion of the small quantity of hay, barley or water given them, and which they attempt to swallow, is returned by the nostrils. The slightest compression of the larynx produced the greatest pain, and caused a fit of coughing of more or less long duration, and which appeared to be most harassing to the animal. The pulse, nearly always normal with some so affected, quick with the majority, was never strong, and in those which suffered from the disease in the most intense form it was full and hurried. The sick animals did not lie down, but standing seemed to be a most uneasy position for them, as every instant they kept resting and moving their limbs alternately. This malady, which affected nine horses at one time, was continued and did not last beyond from eight to twelve days. Its termination has always been a fortunate one. The causes of this attack are unknown to us; some lame horses, but otherwise in good health, have been seized with it all at once when put beside horses which were affected; nevertheless, nothing authorizes us in supposing that it bears a contagious character.¹

In Britain the epizoötic diseases of the past three years are thus noticed: 'For these three years past the influence of the atmosphere, under the various changes it has exhibited, has been peculiarly marked in its effects upon the bodies of animals, especially in the northern metropolis, and surround-

¹ *Compte Rendu de l'Ecole Vétér. d'Alfort. Recueil de Méd. Vétér. vol. x. p. 520.*

ing country. First, in producing the fatal and destructive bronchitis which so generally prevailed ; next, in derangement of the bowels analogous to cholera ; and lastly, in three other forms of disease : First, sore throat, terminating in strangles, in which the disease appeared in varied forms, the abscesses being found in all parts of the body, and in some proving fatal by the tumours interfering with the functions of organs essential to life (the lungs and abdominal viscera); and in others proving fatal by the abscesses bursting into the chest or abdomen, and setting up a destructive irritation. Secondly : Erythematous disease, in which sudden eruptions have taken place generally over the whole body, attended with low febrile action, weakness, and slight soreness of the throat, but otherwise with little disturbance of the respiratory organs; slight derangement of the abdominal viscera, but no apparent derangement of the sensorium : the eruptions on the skin, in some cases, disappearing as suddenly as they came, but generally returning a few times before they entirely left the animal ; in other cases, proceeding at once to a slight effusion from the surface of the tumours, followed by a desquamation of hair, and then going quite off ; while in others a permanent alteration of the skin has been followed by a deposit of a small quantity of calcareous-like matter in it, forming little tumours. The animal during the disease showed considerable weakness, attended with loss of flesh and condition ; being unable to stand free blood-letting, and, from the absence of the buffy coat on the blood in the early stage of the disease, apparently not requiring it. . . . Thirdly, the frequent occurrence of tetanus.¹

In Courland no diseases of an epizootic character appeared among cattle. The milzbrand broke out on two estates, but it was so quickly stamped out that only thirty-four horses, six sheep, and two cows became victims.² In Pomerania catarrh was very prevalent among horses, and often lapsed into disease of the lungs ; so general and so virulent did it become that it was thought to be infectious. Angina and glanders were also

¹ The Veterinarian, vol. vi. p. 484.

² Lössart. Die Russischen Ostseeprovinzen, vol. i. p. 201.

unusually rife. Mange raged in several districts, and at the same time itch affected the people in these places. Hæmaturia and typhoid lung disease, as well as the 'foot-and-mouth' complaint, occurred among cattle. Abortions were very common, and were supposed to be occasioned by bad forage. Sheep-pox raged in some districts.¹

In Brandenburg the prevailing diseases were of a nervous character. Milzbrand was rather deadly among horses and cattle. In one instance it was thought to be due to the overflowing of the Oder, which, on the disappearance of the waters, left a large quantity of putrefying vegetable matter and slime-covered herbage on which the animals had to feed, as well as foul water for them to drink: these causes were all intensified by the great heat of the summer and autumn. In many neighbourhoods—especially the low-lying ones—contagious pleuro-pneumonia prevailed during the winter months of 1833. Variola ovina reigned in seven districts all the year through. Rabies was very frequent among dogs, but no cause could be assigned for its appearance. Aphthous foot disease was present among cattle, and so wide-spread and virulent was it at Frankfort that the police regulations had to be enforced, but without avail, as it raged over the whole country, and but few herds escaped. It began in July and ended in November, travelling from east to west. If it attacked one animal it soon spread over the whole herd, and calves were usually seized with it on the third or fourth day after birth. Occasionally it was observed that, in two localities of a precisely identical character, one would be attacked and another not—that where favoured herds were strictly secluded they often escaped, while the neglected ones suffered severely, and sometimes the opposite result took place. The causes were supposed to be long-continued heat and drought, succeeded by a sudden change to cold rainy weather, whereby the pastures were always wet; but more stress was laid on some peculiar and indescribable condition of the atmosphere, for animals kept in stables and not exposed to the cold and wet had the disease as generally and severely among them as those always exposed. Earlier,

¹ Sanitätsbericht des Med. Colleg. von Pommern, 1833.

and still more virulent than among cattle, raged the foot-and-mouth disease among swine; so that in those places where the cattle became affected, it was believed that the infection had been introduced by swine driven from other localities among them, though this is not very probable. Pigs suffered from anthrax. Hæmaturia was very fatal among cattle, death taking place on the second or third day. On examination the kidneys were found inflamed, and their external surface black; the stomach and intestines were also inflamed; the muscles were of a blueish colour, the peripheral bloodvessels full of blood, but the large vessels and the heart empty. The blood itself was thin and of a bad colour. The disease was due apparently to low, damp meadows, for when the surviving cattle were removed to high-lying pastures the malady disappeared.¹

From Dalmatia it is reported that as the influenza appeared in mankind of a rheumatic and catarrhal character, so it also seemed to extend among animals as an epizooty of a febrile and catarrhal nature, with a tendency to affections of the tongue, the throat, and the joints.²

In Galicia it is noted that of all the epizooties among the domestic animals, the rinderpest was the most wide-spread and destructive. For the number attacked in two hundred and thirty-six places in several districts amounted to ten thousand five hundred and sixty-four, of which six thousand nine hundred and sixty died, and three thousand six hundred and four recovered. Besides this plague, in eighty-eight places contagious dysentery, the foot-and-mouth disease, milzbrand, and variola ovina, as well as scab, prevailed.³

In Bohemia, where epidemic influenza appeared in March, milzbrand showed itself among cattle in October and November. A contagious disease broke out among swine and poultry, and hares were found dead in the fields.⁴ In Upper Austria, in the last half of the year, typhoid lung disease was common among cattle, and 'foot-and-mouth disease' among

¹ Sanitätsbericht der Provinz Brandenburg, 1833.

² *Weber*. *Öesterreich. Med. Jahrbuch*, vol. xxi. p. 20.

³ *Ibid.*

⁴ *Ibid.* p. 368.

cattle and swine. Anthrax was epizootic, and rabies was unusually common. Two horses had to be destroyed for glanders.¹ In Styria, during the summer, hæmaturia and foot-and-mouth disease appeared among cattle.²

In the Tyrol, epizootic lung, bilious, joint, and softening of the bone diseases were prevalent among cattle. In Roveredo, contagious pleuro-pneumonia, and in Trient, the milzbrand appeared among cattle.³ In the Voralberg and in the Canton of St. Gallen, in Switzerland, the aphthongular, or 'foot-and-mouth disease,' affected cattle and swine in the month of November, and in this month it also broke out in the Grand Duchy of Baden, and in the Cantons of Zurich, Schaffhuse, and Bâle.⁴ This disease appears to have reigned, in a general manner, from the frontiers of Poland even to Belgium.⁵

In Saxony, where epidemic influenza affected the human species in April, the veterinary professor, Prinz, gives the following account of the medical constitution of that kingdom, and of this disease: 'The prevalent diseases among the domestic animals corresponded to the temperature and weather in this neighbourhood, and were of a catarrhal and rheumatic nature. Yet in many months among certain classes of animals—as dogs, cats, and horses, they were also of a nervous type, marked by tendency to paralysis and convulsions. Of pestilential diseases among animals, there is only one that really deserves mention as occurring among cattle and swine, and being due to contagion or the presence of miasma; for the two following diseases receive the common denomination of plague because they happened to have spread in one or more herds, though they were ordinary well-known maladies: 1. Anæmia, or rot in sheep (*hydropische cachexie*), combined with the generation of worms in the liver and bronchial tubes, appeared in many of the low damp sheep-walks of Saxony, and reigned during the winter. It was caused by the past wet year, and prevailed among the flocks which, since 1828, had suffered from foot-

¹ *Weber.* Oesterreich. Med. Jahrbuch, vol. xxi. p. 193.

² *Ibid.* p. 510.

³ *Ibid.* p. 359.

⁴ *Archiv. Schweizerthierärzte*, vol. vii.

⁵ *Korber.* Handbuch der Seuchen der Hausthiere, p. 195.

rot. 2. Catarrhal fever of sheep broke out in the high-lying lands in July and August, and chiefly among the lambs after shearing, and the two-year-old animals, if they were exposed to cold weather or to heavy showers. 3. The foot-and-mouth disease among cattle and swine. The first trace of this affection appeared in the month of July, on the south-eastern border of Saxony, towards Bohemia, partly in the district of Seblitz and Zinnwelde, and in stables on both sides of the border. Later, it advanced in various directions. At first it broke out only in separate and widely separated districts, and in these only in scattered stables. Still later, in September and October, this disease extended over most of the districts of Saxony, and over many other countries in Germany. The course of the malady from its outbreak plainly showed that it was contagious, as it could be readily followed. In the month of June several large fairs were held in Bohemia, and to these large numbers of Hungarian and Podolian pigs were brought. These the smaller dealers bought and took into the provinces, and into Saxony, to be sold to individuals for fattening purposes. These animals brought the disease, for they were the first to suffer from it. The traders, also, in several places were found selling lame pigs.

‘It is not to be thought that the pigs were suffering from the disease in their native country, or acquired it there; far more likely is it that they received it during their transport, and probably towards the end of their journey. This is further confirmed by the fact, that pigs coming from uninfected districts to the markets took the disease in the stalls in which they were placed after being sold, and infected other swine as well as cattle. That this malady is really infectious, has been proved not only by exact observations of this kind in cattle and swine, but also by many experiments, and the latter even show that it may be transmitted to other kinds of animals; for two asses which were brought into a cowshed, in which the greater number of the animals were suffering from this disease, were shortly after attacked with a vesicular eruption on the lips and in the mouth. The natural infection

was generally produced by fodder which had been soiled by the sick creatures, the mutual smelling and licking of each other, or by tainted litter, and roadways which healthy beasts passed over after the unhealthy. Hence the corresponding local outbreaks on the mouth or feet, which mostly manifested themselves in about three days. On the other hand, during the later course of the pestilence, the presence of this infection was not so palpable, for in many instances it attacked all the cattle in a stable or neighbourhood all at once, thus constituting itself a veritable epizooty. As in the commencement the disease could not fairly be ascribed to the foreign animals, but only began in them because they were exposed to atmospherical influences during their journey, the question therefore arises as to what were these injurious influences at work in the production of the malady. Upon this point, however, it can only be remarked that the state of the weather was just the same in the course of this year as in the previous year in which the foot-and-mouth disease occurred—namely, there followed the excessive heat of May, June, and July, heavy storms of rain, and then continuous rainy weather.¹

The ‘influenza,’ typhoid, or bilious fever of horses, as it was then named, was observed at Schaffhausen (Switzerland) and at Baden in a very severe form. The symptoms did not differ in any marked feature from those already enumerated.²

Ammon describes the same disease as it appeared in 1832, in East Prussia, among the horses of the Russian and Polish army corps on the frontier of that country. Funke says this malady also appeared in 1832 and 1833 in many places in Saxony.³

Herr Willand, veterinary surgeon at Wörrstadt, in the province of Hesse, makes us acquainted with a very curious epizooty, or rather enzoöty, which (already briefly referred to in the last century), gradually increasing in severity and extent in that province, at last assumed so serious a character as to attract the attention of the Government. It consisted in a fragility of the bones in cattle, similar to what takes place

¹ *Prinz. Clarus und Radius. Beiträge*, vol. i. p. 136

² *Die Thierarzt. Schaffhausen*, 1834.

³ *Wirth. Op. cit.* p. 157.

in very old age, accompanied by marked symptoms of disease and suffering. This gentleman writes: 'So many instances of the prevalence of this disease among cattle having prevailed through the whole province of Hesse, I was commissioned by Government to travel through the Cantons of Allzei, Wörrstadt, Wöllestein, and Oppenheim, in order to observe the symptoms of the malady and the methods of cure employed. I found, in the course of my journey, eighty-two patients suffering from brittleness of the bones, and of these fifty-six were destroyed. According to my promise to those by whom I was employed, I shall describe the disease which prevailed in these cantons in 1833, and previously in the year 1830, and shall add to this description my opinion as to the prevention and cure of it.

'*Fragilitas ossium* in cattle is a lingering disease, originating from some altered state of the circulating fluid. It has some similarity to the effects of old age, and may be known by the gradual wasting away of the frame and the weakening and brittleness of the bones, which latter at length, and without any external mechanical force or cause, are suddenly snapped asunder by the mere weight of the body. Early in the month of May, 1830, when this disease prevailed at Dexheim, I had many opportunities of observing it. In the commencement of the complaint I always found that the animal was lame of one foot—and by this I was frequently deceived, for I attributed this lameness to some external or mechanical cause; but it always increased, and gradually established itself in all four feet, and the animal could then scarcely stand. In general, I found the beast in very good condition, although there was always a slight degree of fever perceptible. She also continued to give her milk as well as ever, and was generally the best milker in the lot. But these deceitful appearances soon vanish; the animal wastes gradually away, shivers; its teeth chatter; its gait is weak and tottering; its eyes are dull and watery; the mucous membranes of the mouth are foul and pale; she lies down, and is unable to rise again; cough comes on; she yields little or no milk; her food is not properly digested; she has violent diarrhœa; and

at length she dies, with or without some of her bones having snapped asunder.

‘I never saw any oxen attacked by this disease. It always appeared in cows, and in the best of them; and either in those that were pregnant, or that had calved three or four weeks previously. It was quite evident that every little nourishment which the mother had yet the power of acquiring was appropriated by the young animal *in utero*; for I not infrequently found the new-born creature perfect and healthy, while the parent was weak and wasted.

‘On post-mortem examination of animals which had died of this disease, I found that the fat had nearly or quite vanished from the cellular tissue; the flesh was flabby; the bones brittle, easily broken, and covered with reddish-blue spots; the inner side of the ribs very porous, and dark-red; the marrow thin and fluid-like, and of a dirty reddish-yellow colour; the substance of the spinal cord and the brain very soft, and of a greyish colour; in the ventricles of the brain, and between it and the dura mater, was a quantity of fluid; and in many animals there was a great deal of fluid in the chest and abdomen, especially in the latter; in short, I found all the appearances which in general accompany a disturbed state of the animal fluids.

‘Many writers assert that this disease is produced by sour fermentations, and food which generates an acid, as potatoes, turnips, clover, etc., and mouldy or unclean fodder, and also by sour pasture and many kinds of grasses; but they who assert this should recollect that this disease has been prevalent on the Alps for nearly fifteen years, where no kind of grass grows, and impure mouldy fodder, which might generate acid fermentations, is scarcely ever given. They should also recollect that this disease has appeared in the cow-house in which many cattle were kept, all of whom had the same food, and to whom the same attention was paid. A very few suffered from the malady, and all the rest escaped. Lastly, they should recollect that this disease is equally prevalent through the whole province of Hesse, and showed itself in every place that I visited with but little difference, whether the animal was

well or ill fed, well attended to or neglected. From this we are led to believe that some internal cause exists—somewhat that favours the formation of an acid in the intestinal canal ; for we know that in rumination the digestive organs are the predominating ones, while, on the contrary, the sensitive organs have little influence, and therefore diseases of the digestive organs are of the most frequent occurrence. To this may be added the different kinds of fodder, which are often prejudicial, both as to quantity and quality—especially when the season is bad and the different crops fail, and recourse is obliged to be had to some substitute. Another cause is the bad construction and total neglect of the cow-houses, and the absence of pure air in them ; and lastly, the absurd dislike which most owners of cattle have to allowing them to drink any cold water. All these things tend more or less to favour the production of this disease, although they cannot be positively said to be the absolute causes of it. I am convinced that the foundation of the malady is laid by the giving of impure or mouldy food, or any kind of food which has a tendency to generate fermentation ; and the foundation being laid, the disease very soon appears.

‘How is this disease to be cured? First, and most important of all, are preventive measures, since it is far easier to prevent a disease than to cure it after it once has appeared.’ Various remedies were tried ; ‘but although by these means I succeeded in curing several cows belonging to Herr Dahlen, of Dexheim, which were attacked by this disease in the early part of 1830, it returned again in the same year ; and, in spite of all our efforts, they died with the symptoms before mentioned, and also very great swelling of the udder. I can assure you that in the province of Hesse the greater part of the cows are afflicted with this brittleness of the bones ; but the farmers say as little as possible about it, because they would not have the reputation of possessing diseased cattle.’¹

As a strange coincidence, we have a disease of the bones of an entirely opposite character—*ramollissement*, or softening—occurring as an epizooty at Antwerp, in Belgium. It was

¹ Willand. Magazin für die Gesamnte Thierhielkunde, 1832.

until then unknown to the veterinary surgeons, and appears to be quite as remarkable as the epizooty in Hesse, to which it bears several very striking points of resemblance. 'About the month of May, 1833, a very remarkable disease, and one which, I believe, has nothing analogous to it among those described in veterinary medicine, manifested itself among a large number of beasts belonging to the free and constrained colonies of Merxplas and Ryckworsel, and, beyond these, to farmers in their environs. It seems to have broken out all at once in a great number of cows, and occasioned great disorder and alarm in the cow-houses of the constrained colony, and showed itself some time after in the free one. . . . The abundant salivation is regarded by the cow-keepers as the first and principal premonitory sign. Besides this, the coat becomes rough and "staring;" the animal exhibits a very marked stiffness of the extremities, moves them with difficulty, and can scarcely walk. A great tension of the muscles of the neck, and of those along the dorsal and lumbar spines, is observed, and this makes the cow lower her head with slowness and evident pain, as well as causing her to manifest extreme rigidity in retrogression. All these symptoms become augmented in intensity, with the exception of the salivation; the animal lies down on her hind-quarters, but rests the anterior portion of the body on her knees—maintaining for a long time this position, and if not aided when endeavouring to get up, falls down again. Painful swellings take place on all the extremities; especially have these been remarked on the articulations, such as the hocks, the hip-joints, the elbow, the fetlock, and the coronary joints; they have also been noticed about the buttocks, the haunches, the middle of the ribs, and other places. In some cases, however, they will be found on only one limb, which becomes swollen, and the cow limps on it. There is general emaciation, and gradual loss of strength. The animal keeps a recumbent posture, and does not seek to get up; the engorged parts are hot, become more and more swollen, until oftentimes they assume a monstrous size; the economy becomes considerably debilitated; the altered bones which serve as a basis for the soft, contractile textures become

fractured, and then the member hangs and dangles about. The movements that the animal makes show that it is suffering most fearful pain ; these contortions make it look disfigured. At last the fractured bone sometimes protrudes through the skin—an event I have often had occasion to observe on many animals. Although the cow is found in this afflicted condition, yet it eats, drinks, and performs its principal functions ; and, if we except the commotions it makes, it appears little disturbed.

‘The autopsy reveals : In the abdomen all the digestive viscera are in their normal state and exhibit nothing particular, with the exception of the mucous membrane of the fourth stomach (*caillotte*), which has a slight reddish-blue tint ; the genital and urinary organs do not offer any appreciable lesion. In opening the thorax, I did not find any disorder ; the lungs were collapsed and shrunken, etc. The vessels of the cavity of the cranium were injected, and the membranes enveloping the brain were in their natural state. On cutting into the bony enlargements, traces of inflammation were discovered in all the textures in the vicinity of the fractured bones ; they exhaled a gangrenous odour, and showed infiltrations of a yellow colour, toning down to a livid black. In the middle of these engorgements were found fragments of necrosed bone of various sizes. The muscles were without consistence, and in their interstices there existed yellowish concretions. The bones that were fractured, but not yet detached, were soft, and their extremities tumefied ; these also exhaled a foetid odour ; the medullary substance was very fluid ; the periosteum and the medullary membrane were engorged and thickened ; the vessels of these tissues contained black blood, resembling in their colour those of the neighbouring cellular tissue. At the centre of the articular cartilages, red or reddish-tinted patches were observed, and the synovial vessels appeared to be more engorged than in their natural state.

‘*The causes of the disease.* These cows, nearly all of which were in calf, were fat enough, and nourished as in other stables. In examining with the greatest care the dry food

they had to eat, as also the meadows, in search of poisonous plants, I could discover no cause capable of exciting this malady. The water they had to drink has been analyzed by a distinguished chemist, but it has afforded no trace of any injurious ingredient, and there has only been observed a deficiency of earthy salts. The cow-sheds were airy enough, and grooming with the hand had not been neglected. The animals were led to the meadows after the disease had made some progress in the stables, and then they were only taken there to favour the action of the muscles and remove the stiffness from the limbs. I am of opinion that the great dryness of the season, and the scarcity, even the total failure, of green food which is so necessary to animals during the summer, constitutes the veritable cause which has predisposed these animals to this attack of disease, but the exciting cause of which is altogether unknown to me.¹

As in last year, some cases bearing a resemblance to cholera in man were observed among the lower animals. Mr. Youatt reports one of these as occurring in a zebra: 'August 23, 1833. I was in the Zoological Gardens, and had been sitting for a considerable time over the paddock of the female zebra; she was walking about as usual, with nothing about her to indicate disease. I was told afterwards that she had not eaten her food that afternoon; but this occasionally happened. One of the keepers passing about seven o'clock thought that she heaved more than usual, and, as he watched her, she purged a thin yellowish fluid. He immediately started off for my house. . . . The purging continued—it was of a thin whey-like consistence, somewhat tinged with yellow. She was uneasy—occasionally pawing, striking at the belly, looking round at the flanks, stretching out every limb, as if cramped or in pain, grinding the teeth, lying down and getting up immediately, the flanks heaving laboriously; the mouth and muzzle were cold, the limbs intensely so; the pulse not to be felt at the jaw, and 110 at the side; prostration of strength rapidly came on, and before he (the assistant) left her she began to stagger as she walked. Mr. Chapman

¹ De l'Ostéite Aigrië Epizoötique. Recueil de Méd. Vétér. vol. xiii. p. 337.

attempted to bleed her, but before half-a-pint of blood was withdrawn she fell. When she rose he tried again to get more blood, but she almost immediately fell again, and he gave it up. He represented the blood as trickling down the neck like so much treacle. I saw the blood on the following morning, and it did not give any indication of inflammation. . . . The purging continued, but the pain gradually abated ; the prostration of strength, however, rapidly increased ; about ten o'clock she began to be afraid to move, for she fell almost as soon as she stirred a limb. She, however, soon got up again ; but before eleven she was unable to accomplish this ; soon after that she ceased to make the attempt—she lay quiet, unconscious, and died without a struggle before twelve. She was not ill five hours. . . . The stench, when she was first opened, was of a peculiarly oppressive character, and exceeded anything I had ever experienced. I do not recollect any foetor that approached to it. . . . When the contents of the abdomen were first exposed *in situ*, there was scarcely any difference in their appearance from that which might have been expected, considering that the animal had been dead nearly three days, except that there was a somewhat unusual pallid, blueish lividness. There were, here and there, spots, patches of a darker hue, but they did not wear the character of inflammation. The whole of the intestinal canal was evidently filled by some fluid, with an inconsiderable proportion of flatus. The intestines were then opened. The smaller ones were filled by a whey-coloured fluid, with a tinge of yellow, and of a most offensive smell. They also, and the jejunum particularly, contained at least a hundred worms, of the *teres* species, but smaller than those usually found in the horse, and with some points of difference from them. There was not the slightest inflammation of any portion of the small intestines. A little quantity of half-masticated hay swam in the fluid. The larger intestines were filled with a fluid of a somewhat browner colour, and more offensive. A greater quantity of food was swimming in it. The inferior portion of the colon exhibited a few dark dull patches, but otherwise was more than usually free from infection. At the

commencement of the colon, and about the caput coli, there were externally more decisive marks of inflammation, but it was not examined internally. To all external appearance, the cæcum was devoid of inflammation. The liver was of a livid blue colour, very friable, and the duct filled, not turgid, with bile. The spleen appeared to be enlarged, and was friable. The lungs were in the highest state of congestion, and the right side of the heart dilated with black blood.

‘May it not be said that the symptoms during life, and the appearances after death, indicated a disease analogous to cholera in the human being? She had been placed in a low and damp situation in the garden, and where, and where alone in the whole garden, disease, both thoracic and abdominal, had prevailed during the preceding five or six weeks.’¹ In the next year (1834), Mr. Bull of Huntingdon communicates a case which the editor of the ‘*Veterinarian*’ has named cholera, from the similarity of many of its symptoms with that malady. The subject was a mare which Mr. B. was called to attend at five p.m. on the 15th of September. ‘She was perfectly well in the morning, but I found her at the time stated very much tucked up, voiding copious watery stools, of a fœtid smell and dark colour; the pulse at the submaxillary artery quick and very feeble; extremities very cold, the nose and ears particularly so; the eyes very dull; the breathing much oppressed; and there seemed to be suppression of urine. I bled her, and obtained with difficulty three quarts of dark treacley blood. . . . On the morning of the 16th she was much worse. Eleven o’clock a.m. purging stopped; pulse not to be felt; breathing very difficult; tongue blue, cold, clammy; the lips also very blue. One o’clock p.m. she fell down as if cramped; voided more fæces, of a much lighter colour, frothy, and with a putrid smell; and there was much twitching of the legs. This gradually subsided, and about three o’clock she died very calm.

‘*Post-mortem Examination.*—Bowels much distended with flatus, and congested in several places; as also was the bladder, and especially the lungs, which were gorged with

¹ *Youatt.* The *Veterinarian*, vol. vii. p. 427.

blood; but there was nothing like inflammation of them, or solidification, or effusion.’¹

Mr. Lardner, M.R.C.S., states, that in the harbour of Oporto a racoon was removed in a perfectly healthy state from a ship in which there was no disease, into another alongside in which the cholera was raging, and the hold of which was very foul. In a few hours after, this animal was seized with vomiting and cramps, and died.’²

An Indian newspaper³ contains the following: *Ghaseepore, August 27th, 1833.*—On the evening of the 26th of August, two distinct shocks of an earthquake were sensibly felt here; the first at eleven o’clock, the second at half-past eleven. The thermometer had risen a good deal through the day, which was closer and more sultry than usual. The natives say there has been nothing of the kind since 1820. It is worth remarking that in that year an epidemic raged among the stud horses, and carried off a great many. This year (June, 1833) the dreadful disease again broke out among them, and carried off about fifty noble steeds. The obituary also for Europeans fills a much larger space than usual, particularly as regards the children; and of cholera cases not a few.’ In another paragraph is the following extract: ‘A letter from Monghyr reports that on the 26th ult. a smart shock of an earthquake was felt a little before nine o’clock; and that in the night of the following day a large flight of locusts passed over the station: the direction whence they came is not mentioned. We understand that a flight of locusts was seen at Jubalpoore about a fortnight before.’

Mr. Bennett⁴ describes a series of heavy losses sustained in many sheep-farms in Australia by the sheep devouring their lambs. This morbid appetite of the breeding ewes was more particularly manifested about the Murrumbidgee country, New South Wales. ‘On account of the morbid appetite existing in the sheep, their natural innocent dispositions are

¹ *G. C. Bull.* The Veterinarian, vol. vii. p. 548. ² The Lancet, 1833, p. 301.

³ Bengal Hurkaru, November 6, 1833.

⁴ *Bennett.* Wanderings in New South Wales. London, 1834, vol. i. p. 220, vol. ii. p. 343.

changed ; they become carnivorous and savage ; and it is difficult to drive them away from the pits in which earth impregnated with alkaline salts may be situated ; although when taken to a *fresh run*, they proceed feeding as usual, until this salt earth is again discovered, when they become addicted to the unnatural custom of devouring their lambs. On discovering one of the pits, they rush to it with the activity of deer, licking and gnawing the earth with avidity. Among breeding-ewes, eating the earth was followed by their devouring the progeny of other ewes, when brought forth ; and, on the shepherds endeavouring to save the lambs just born from their voracity, they would rush upon them, biting their trousers, and making strenuous efforts to seize the lambs in the arms of the men. The different places about the Murrumbidgee country, where this took place, were shown me during my visit to that part of the colony. One place was a black bog earth, on which marks of the tongues of the animals, at those places where they had been licking, could be distinctly seen ; the second place was similar to the first, and two others consisted of a reddish clay. The situations were about limestone ranges ; and it has been remarked that the water holes, as they are termed (which, when dry, are the places frequented by the sheep for the purpose of licking and gnawing the earth), after standing for three or four days, acquire a peculiar sickly, sweetish taste : and it is in these pools, after the evaporation of the water, that the earth is situated, so eagerly devoured by breeding-ewes. When driven away, they are seen licking their mouths, as if enjoying the delicious treat of which they had just partaken, making every endeavour to return ; and men were required to be kept constantly on the watch, to prevent them ; but with every exertion it was almost impossible to keep them off, for one flock advanced as another was driven away, and the people are soon tired out. (It is said, if sheep have not bitter herbs in their pasturage, they will not thrive.) After eating the earth, they do not feed on the herbage in any regular manner ; they are restless, picking a bit of grass here and there, according to the statement of the shepherds, until, on

the approach of evening, they feed in a more regular manner. Sometimes six or eight ewes may be seen running to a particular spot on the pasturage, about the roots of clumps of grass, and sometimes those of fallen trees, licking and gnawing about the spot, as if it had a similar earth to that found in the *water-holes*. They will burrow underneath the bank to get the saline earth, at those places where it may be most moist. The quality of the ground is supposed by the shepherds to be more prevalent about *limestone ranges* than any other geological formation ; but I cannot consider this as satisfactorily proved. Although it has prevailed, for the most part, in places at which the limestone has formed the principal geological character, yet there are other parts of the country where sheep have manifested a similar morbid appetite, when no limestone has existed. A ewe being missing about some limestone ranges, was seen coming out of a small cavern, in which she seemed to have found some of the saline earth, as she had a quantity of earth about the mouth ; and the place was afterwards much frequented by other ewes, until they were removed from the spot. The sufferers in the loss of lambs and ewes from this morbid appetite of the latter, are principally Messrs. Dutton, O'Brien, Warby, Hume, Manton, etc., all having sheep-runs about the Murrumbidgee country. Mr. Dutton addressed a letter to the Government on the subject, with the intention of getting his grant of land, if possible, changed to some other part of the country. The following is an extract from his letter, which clearly points out the destructive effects produced among the flocks, the most valuable stock of the settler in this colony, and on which his prosperity greatly depends. "The disadvantages which I have thus to detail to you, arise from the novel disease with which the sheep are affected. It appeared after the first lambing, and within four months from the time of my occupation of the land in question. Its unaccountable and destructive nature renders my selection utterly useless. The nature of the disease, as far as I have yet remarked, is as follows : The sheep, in the first place, devour this earth ravenously, the pasture being at the same time luxuriant, principally

rib-grass, and other succulent herbs ; they become speedily emaciated from this unnatural diet, more particularly as the lambing season advances, and when lambing commences : the other ewes surround the one lambing, and devour the young as they emerge from the mother. The lambs saved through the care of the shepherds become poverty-stricken, from the low condition of the mothers, and generally die before they become a month old. Thus, instead of having twelve hundred lambs this season, as my regular increase, I do not count four hundred ; besides a very great decrease from mortality in the maiden sheep, originally purchased at high prices. The number of shepherds required being at the same time thrice beyond the proportion usual in the colony."

'The result was, that as the regulations of the Government could not permit the grant to be changed, Mr. D. was obliged to sell it as a cattle-station, and purchase land in a more favourable part of the colony for his flocks. In December he removed them, as a temporary measure, to Yas Plains ; some of the ewes lambled after they had been removed, but the morbid appetite had ceased with the exciting cause, and the lambs were not attacked by the other ewes.

'At the Murrumbidgee country I saw one of the little lambs which had just been saved from the ravenous ewes, and had its tail bitten off before it was rescued. The circumstance was as follows, which shows the mode of attack : The ewe was lambing, when six or eight others rushed towards her, but were prevented from coming near by the shepherds ; they would not, however, go away, but kept following, and as soon as the ewe dropped her lamb (the shepherds having been engaged for the moment in driving away another party from another lambing ewe) it was attacked, the tail was bitten, but they were prevented from proceeding further by the immediate return of the shepherds.

'They also evince as much eagerness to devour the "*cleanings*" or after-birth, if not prevented ; but if the little animal has been licked clean by the mother, and is dry, it may be placed in the hurdles amongst the other ewes, without their being attacked or injured. Thus showing that the salt nature of

the *liquor amnii*, which at that time covers the young one, is the principal exciting cause for this extraordinary propensity to destroy, that appetite being excited by having previously eaten the saline earth from the "water-holes." At the places where this destruction to the hopes of the wool-grower takes place, the pasturage is luxuriant; and the situations would be selected by a person ignorant of the before-mentioned circumstances as some of the finest sheep-runs in the colony. The mother will not devour her own progeny, but will sometimes (which is not unfrequent in maiden ewes) not take to the lambs, but forsake them, until the shepherds hurdling the mother and young one together, the mother at last acknowledges her young. It is not uncommon, however, for them to follow other ewes, attack and devour the lambs brought forth by them in as ravenous a manner as the others would have devoured their young. The ewes will not even wait until the young lamb is born, but when they see a ewe yearning will rush upon her, devour the young one as it proceeds from the mother, and thus sometimes half the lamb is devoured before it is wholly born. Although the shepherds, by attention, endeavour to avert the evil as much as possible, yet when many ewes are lambing, the number of shepherds attached to the flocks is too small to enable them to attend to every individual case. It may be asked, Does not the usual impulse of natural feeling induce the mother to prevent the destruction of her offspring? In reply, it may be said that the poor, helpless, timid creature bleats, but makes no effort to defend her young one from the furious attacks of the "mob." The poorest and leanest ewes are those remarked as being most eager to devour the lambs of others; they have been brought into that miserable state, from having previously been fine fat ewes, merely from the custom of devouring the saline earth. The head shepherd of Mr. Dutton's flocks told me that there was not a finer flock of sheep in the country than those, previous to their devouring the salt clay and earth, after which they "fell off in condition," until they became in the miserable state in which I now saw them.

'The following is another, among too many instances of

their voracity: A ewe had just commenced lambing, was in labour, but no portion of the young one had yet been born, when from fifteen to twenty ewes were seen running towards her. The shepherds perceiving this, rescued the ewe, and remained near her until she had done lambing; the other ewes kept at a short distance, occasionally advancing to make an attack upon the young one. The lamb was brought forth, and when perfectly cleaned and dry was placed in the sheep-fold in the evening with the mother, as usual, but the other ewes then took no notice either of the mother or the young one.

‘Although the breeding-ewes suffer both in health and acquire this morbid appetite of devouring the progeny of others and their own cleanings, yet rams, wethers, and ewes *not breeding* fatten to an astonishing degree upon the same pasturage where breeding-ewes had become miserably lean, and died in numbers from being in so low a condition. On one of these spots, I saw a wether killed from a flock, which was so fat as to render the meat almost uneatable; and Mr. Manton, who, from the cause before-mentioned, had been obliged to remove all his breeding-ewes from his pastures about the Murrumbidgee, would, nevertheless, send his rams and wethers on the luxuriant pasturage as the best place to fatten them; indeed, all concurred that rams, wethers, and even the ewes, if not breeding, thrive and fatten upon that pasturage-land about the Murrumbidgee country which proves so destructive to breeding-ewes and their lambs. Mr. Manton had sheep on the limestone ranges, near the banks of the Murrumbidgee river; they became impoverished, and acquired the morbid appetite for devouring the young lambs; but when he removed them to a granite soil, in the vicinity of Yas Plains, they speedily recovered their former good condition, and the morbid appetite left them, more probably from their being no “water-holes” containing saline earth about the place, than from the change of strata; however, they never returned to the unnatural practices, as was so frequent on the sheep-runs at the former place.

‘At Jugiong, Mr. O’Brien suffered in the loss of lambs from

the same cause ; but by occasionally changing the pasturage it was checked in some degree ; and although lambs were sometimes lost, yet the destruction was much lessened. Even when the lambs are not devoured or destroyed by the other ewes, yet from the miserable condition of the mothers, the shepherds have been obliged to remove the young from their care, from inability to support them, when they endeavour to rear them by hand as "pet lambs." In rearing lambs away from the mother many perish ; and besides, the shepherds object to raising pet lambs, if it could be avoided, because they are seldom good sheep ; when turned out in the pasturage they become *poverty-stricken*, still looking for the fostering hand that reared them.

'At Narangullen, a sheep station in the Murrumbidgee country, near Guadarigby, before the sheep discovered the spots in which the saline earth was situated, they brought forth the young in the usual manner, and the cleanings (if the delivery happened during the night) were found in the fold, and given as usual to the dogs ; but when the earth was discovered, the lambs were attacked at birth, and the cleanings were devoured, if not timely removed by the shepherds.

'At Darbylara (also situated on the banks of the Murrumbidgee river) Mr. Warby, who has a fine farm at that place, suffered such losses among his flocks from this cause, that he was obliged to sell those that remained ; yet at Brungal, a station about eight miles distant near the Tumat river, there was a small flock of sheep which had not shown any of this morbid appetite, and were in excellent condition. On visiting Mr. Warby's farm, the whole had the appearance of being excellent pasturage, and affording excellent sheep-runs ; but about the pastures there were several pools of brackish water, to which the sheep resorted, and from which it was found at last impossible to keep them. At this place again, although so destructive to breeding-ewes, rams, wethers, and ewes not breeding would fatten, and become in the finest condition, upon the same pasturage. The sheep at these places eagerly devour the *Azolla pinnata*, which grows abundantly in the whole of the ponds and rivulets. At Guadarigby I remarked

that the cattle, after they had been turned out of the stock-yard, invariably came licking the ground about the huts. After some doubt as to the cause, it was found that the water in which salt meat had been boiled was thrown away about that place ; and this it was that attracted the cattle ; they would even attack one another to get at some places which had been more impregnated with salt than another. This inclination of animals for salt is by no means adduced as anything novel ; it is not confined to those domesticated among the herbaceous, but also among the wild in that class of animals ; for at Blowrin Flat, in the Tumat country, a water-hole, nearly dry in some parts, and at others perfectly so, and similar to those I had before seen frequented by sheep, abounded with the tracks of the kangaroo ; and, on a closer examination, the earth (which glittered in the sun as if impregnated with saline particles) was licked and gnawed, as was done by sheep in other parts of the country ; but it would be difficult to know whether similar results occurred with the breeding females of the kangaroos.

‘At Lomebraes (about thirty miles from Goulburn Plain, on the road to Yas Plains), the farm of Mr. John Hume, I was also informed that lambs and ewes had been lost from similar causes to those I have been relating. The water of the river which runs through his farm in the summer season, when the water is low, is *hard*, even so much so as to curdle the soap and prevent any washing with it ; but in the winter season, when the stream is increased, it becomes softer. It is curious that Mr. Warby mentioned that a number of his cows had “slipped their calves,” or miscarried, and thought it proceeded from some poisonous herb they had eaten ; but Mr. Hume mentioned that his cows, which are accustomed when breeding to devour the earth impregnated with saline particles, “slip their calves,” and he could attribute it to no other cause. This occurred also at the farms of Gonnong, Mut-mut-billy ; and at all places where the same propensity of licking and gnawing the saline earth and devouring the lambs occurred among the ewes, “slipping the calves” occurred among the cows ; but I heard nothing of their devouring the young.’

A disease among cattle, of an epizootic character, was reported from Jamaica. It was very destructive, and appeared to be most prevalent in low, marshy situations, though it was frequent and fatal everywhere in the West Indies. It was incurable, and as soon as an animal became affected it was slaughtered. The chief symptom was cough and consequent emaciation; and droves of these 'cough cattle,' as they were named, were to be found on every plantation of any considerable size. The chief morbid appearances found after death were depositions of calcareous matter in the trachea, bronchi and pleuræ, with tuberculous matter in the lungs and liver.¹

Hydrophobia prevailed to an alarming extent among the canine race at Barbadoes.²

A.D. 1834. The year was very hot throughout the greater part of Europe, and plague was destructive in mankind at Constantinople, Cairo, Alexandria, and Smyrna. Cholera broke out at Gibraltar, and attacked nearly everyone on the rock. A shower of fish was recorded as having been witnessed on the 17th of May in the neighbourhood of Allahabad, East Indies. Eye-witnesses attest that about noon, the wind being from the west, and a few distant clouds visible, there was a blast of high wind, accompanied with much dust of a reddish-yellow colour, with which the atmosphere was greatly charged. The blast appeared to extend in breadth about four hundred yards. Immense trees and large buildings were thrown down, and when the storm had passed away, the ground all about the village was found strewed with small fish to the extent of two bijahs. The fish were all of the chalwa species (*Clupea cultrata*); they were a span or rather less in length, and from one scar to one and a half in weight. When found they were all dead and dry. The Jumna runs about three miles south of the village, and the Ganges fourteen west by east. The fish were not fit for eating, and it was said that when put in the pan for dressing they turned to blood.³

¹ The Veterinarian, vol. vi. p. 351.

² Schomburgk. History of Barbadoes, p. 683.

³ Bascome. Op. cit. p. 163.

The cholera reached as far north as Sweden this year. At Gothenburg it was remarked: 'The summer of 1834, when the contagion broke out, was remarkable for its great heat. During the month of July the thermometer ranged between 80° and 90° of Fahrenheit, and no rain had fallen for a long time; and it was remarkable that the leaves of the trees in the vicinity of the town turned yellow and dropped, as if the autumn had been far advanced—a sign that there was something in the atmosphere that suited neither vegetable nor animal life.'¹

In Belgium the breaking out of the cholera was preceded by a remarkable phenomenon in the presence of vast numbers of grubs (*Aphis persicæ*). In the month of September the canals of Ghent were cleaned out, and the mud and slime lay for a long time on the quays and in the streets. The Medical Society had predicted the breaking out of cholera, and in scarcely two days afterwards that disease appeared. All at once, and at the same time, innumerable legions of the peach-grub appeared. On the 28th of September they were seen in tremendous swarms at Maria-Kerke, between Bruges and Ghent; on the 29th they were so numerous at the latter place that they intercepted the light of the sun when they rose in clouds from the ground, and their swarms were constantly passing from seven o'clock in the morning until the evening. The walls of the ramparts were entirely covered with them, and they appeared to make the vegetation of the country quite black. On the 5th of October only a few were seen at Antwerp; but on passing the Escant, towards the Tête de Flandre, they were seen again in great clouds, all the road from Antwerp to Ghent being black with them. At the same time they travelled in formidable swarms towards Enclos; and people, to guard themselves from them, were obliged to wear spectacles and to cover their mouths with handkerchiefs. On the 9th of October they had reached to Alost; and until now not one of these creatures had been seen at Brussels, their dense and lengthened masses having accumulated at the bottoms of the valleys which separate Brabant from Flanders.

¹ *L. Lloyd. Scandinavian Adventures, vol. i. p. 432.*

They spread themselves thence from the south towards the north, and from the west to the east, and also from the north to the south ; for on the 13th they were already in large numbers at Tournay. On the 12th of October they covered Brussels, and on the same day they arrived at Mons ; from Brussels they spread to Louvain. On the 15th a great storm occurred, and many days of rain followed. From this time these insects disappeared from Liège, and their dead bodies covered the windows, the furniture, etc.¹

As usual when the weather is hot, anthracoid diseases were frequent among the lower animals ; but the aphthongular epizoöty (foot-and-mouth disease) was as yet the most noticeable of all. It was present in Switzerland and in many parts of France. In the latter country it was seen in the department of the Vosges : 'The aphthous fever, named also aphthous stomatitis, since the month of February last has attacked horned cattle in the department of the Vosges. It first broke out at Archettes, then among the farms in the mountains, and finished by invading the communes on the plain. According to the oldest cattle-breeders, a similar disease had been known there for about thirty years. Of but little importance as to its consequences, this epizoöty nevertheless causes much apprehension among the farmers ; for its appearance in a stable is an almost certain indication that all the animals, no matter what their sex or age may be, will become affected. Its causes, like those of other epidemics and epizoöties, yet remain unknown. Some believe it to be due to the immoderate use of potatoes or beech-mast cake ; but our observations are far from confirming this. The disease showing itself in the winter as well as in the summer, the influence of temperature cannot be invoked as a cause ; and it is the same with regard to stables and *régime*. As to its contagious nature, this is also doubtful. It appears that in certain localities the same influences under which the aphthous fever may be developed among cattle have been such as to affect other animals, and hence the cry of contagion. It has even

¹ *Morren. Annales des Sciences Naturelles, 1836.*

been advanced that people who have drunk the milk of diseased cows have been indisposed thereby.¹

In Courland, in consequence of the very hot weather and rains, milzbrand prevailed with great severity. It was, however, confined to the places where it broke out, and to the animals primarily affected (and which died very quickly), by removing the healthy, putting them in stables, and using cold applications to them. Only one hundred and forty-eight cows, sixty-four swine, twenty-two sheep, and thirty-one horses died in the whole government, notwithstanding the epizooty breaking out simultaneously in several localities. With cold weather all traces of it vanished; but rheumatic affections were then very prevalent, especially among horses, and tetanus was more frequent than in previous years.²

In Galicia, epizootic diseases were very prevalent, but the most destructive of all was the rinderpest (*löserdürre*) among cattle, as out of 22,402 attacked by it, 16,081 died. This time the districts lying on the eastern border, and through which foreign cattle usually passed, suffered less than the western and northern districts. At the same time there raged epizootically among cattle the milzbrand, the foot-and-mouth disease, and a peculiarly rapid and destructive ophthalmia (*augensteife*).

Milzbrand also appeared among pigs in the form of throat anthrax, and among sheep as splenic apoplexy (*blutseuche*) with carbuncles. The rinderpest in cattle was not complicated with any other diseases, and it was remarked that in the autumn it carried off those animals which in the spring and summer had been attacked, and had perfectly recovered from epizootic ekzema.³

In Styria there was a drought and scarcity of fodder, but the only malady was the 'foot-and-mouth disease,' which prevailed in a mild form in the district of Pettau.⁴

In the Tyrol the chief disease was the universal 'ekzema epizootica,' which, besides attacking cattle, manifested itself

¹ *Mathieu*. Recueil de Méd. Vétér. vol. xii. p. 64.

² *Possart*. Russische Ostseeprovinzen, vol. i. p. 201.

³ *Neuhauser*. Oesterreich. Med. Jahrbuch, vol. xxiv. p. 340.

⁴ *Von Vest*. Ibid.

also among swine. Disease of the joints and brittleness of the bones are also noticed as frequent.¹

In Pomerania the forage was so scarce that the cattle had to be driven out in many districts to pasture, almost before the snow was off the ground, when they had nothing to eat but the old rotten herbage of the winter, and nothing to drink but muddy brackish water. The consequence was that in the month of June they suffered from the milzbrand, and from the foot-and-mouth disease. In the same month the *Anemone nemorosa* grew so abundantly in the pastures that many cattle were poisoned by it. Glanders and worm diseases were more than usually common among horses, and the departmental veterinary surgeon, Hildebrand, observed that catarrh frequently degenerated into glanders, which destroyed many horses. Dr. Fauniger attempted inoculation for 'ekzema epizoötica.' Matter was taken from the feet of the diseased and transferred to the ears of healthy animals, and in a short time pustules containing a cheesy-like pus were formed. These animals were not, however, in the least degree protected by it, but many of them had the malady twice, and even thrice after the operation. The disease was remarkably prevalent and severe, and sheep, goats, and swine were affected. The feet were seldom attacked without the mouth being also involved; indeed, the mouth was most frequently the seat of disease. It generally broke out first among cattle, at other times among swine, and afterwards among the sheep and goats. It was thought to have been caused by the heat and drought, which altered the nature of the forage and herbage. Milzbrand was exceedingly rife, and was supposed to be due to the same causes. In the district of Cösliner it was particularly fatal, and when it first broke out death quickly ensued; but after a while it became modified, and the animals lingered a longer time—usually from four to eight days. The symptoms then were loss of appetite and suspension of rumination, tucking up of the belly, a swelling between the jaws, which rapidly extended to the breast, and along to the udder. Extreme

¹ Von Vest. (Esterreich, Med. Jahrbuch, vol. xxiv. p. 340.

languor and prostration set in, and the animals died in convulsions. These were the symptoms noted in June. An examination of the dead bodies showed the blood to be black and tarry-looking; about the throat there was much yellow serum; the spleen was softened and pulpy and like treacle, and in the chest and abdomen there was much blood-coloured fluid.

Cow-pox was observed in fifteen cows which stood all in one row in a stable. Contagious pleuro-pneumonia was epizootic, and so was sheep small-pox. The district veterinary surgeon Schellhaase reports an unusual epizootic ophthalmia among cattle, which suddenly attacked about twenty animals, of whom several died.¹

In Brandenburg, the winter and spring diseases were of a herumatic and catarrhal character. The summer had been unusually hot, and there had been a great drought, which gave rise to gastric and bilious complaints, with a special tendency to diseases of a nervous kind. Milzbrand was not unfrequent in the autumn among mares in foal, or those which had foaled, when these were depastured in low-lying marshy regions with no protection from the sun. Glanders and worm diseases were common: the former malady often followed neglected strangles; thirty-seven horses were destroyed in one district. The mouth-and-foot disease spread over the whole of Frankfurt, and attacked all the herds which had escaped it the previous year, and many of those which had already been affected. It did not pursue any definite course, as in the last year, but broke out here and there, and occurred much earlier in the season, breaking out in March and in May. In the summer months, favoured by the continued heat and drought, it became very general. The epizootic ophthalmia showed itself among the herds in a great many districts, and raged most severely where the 'ekzema epizootica' was least prevalent. It attacked animals of all ages and both sexes, and only ceased its ravages when both eyes of an animal were destroyed, when no aid was given. There was a wonderful agreement in the symptoms as given in the various reports. The causes were generally supposed to be the great heat and drought,

¹ Sanitätsbericht der Provinz Pommern, 1834.

the long-continued dry winds, some peculiar and indescribable constitution of the atmosphere, and the many dust-storms which mechanically irritated the eyes very much. The disease was similar in its earlier symptoms to those of a rheumatic-catarrhal affection. On the second day the eyes were closed, tears flowed down the cheeks, and on opening the eyelids the conjunctiva appeared much inflamed. The cornea became opaque, as if covered with a skin, and upon the pupil there was formed a bullet-shaped excrescence of a yellowish colour, surrounded by a reddish ring. After a few days this mass burst, and gave vent to a transparent fluid, which left a small cavity behind it. In the more aggravated cases, there appeared luxuriant fleshy granulations, and profuse suppuration into the anterior chamber of the eye. The conjunctiva remained considerably inflamed, the globe of the eye gradually diminished in size, and within a fortnight or three weeks a large fleshy mass projected from it between the eyelids. Another description may here be noticed: 'In the Veterinary Sanitary Report for the third quarter of 1834, there is a notice by the district veterinary surgeon, Ziegenbein, of Ampfurt, of the catarrhal inflammation of the conjunctiva among cattle. He says that it was remarkable for its prevalence, especially towards the end of July. They closed their weeping eyes, avoided the light, the inflamed conjunctiva bulged from between the eyelids, and was frequently covered with phlyctenæ, which also showed themselves on the conjunctiva covering the eye, near the cornea, and often caused an opacity of this portion.'¹

Lung disease was extremely prevalent in a number of districts. Owing to the continued heat of the spring and summer months, this peculiar lung disease was complicated with bilious-gastric symptoms, due to the diminished biliary secretion, manifested by diarrhœa or constipation, meteorization, and yellowness of the mucous membranes. In many districts the sheep-pox was rather general, and its origin could not be traced, inasmuch as beyond a circumference of several miles the disease had not existed, and no strange animals had

¹ *Gurlt und Hertwig. Magazin, vol. i. p. 454.*

entered the neighbourhood. Sheep were also attacked with splenic apoplexy, the best-conditioned ewes suffering most; seldom were the rams or yearlings attacked, never lambs. Death was exceedingly rapid, the animals suddenly falling, and in less than a minute were dead. When removed to a less nutritious pasture, and Glauber's salt, and saltpetre mixed with the water, given them to drink, the mortality ceased. To human beings handling these diseased sheep the risk was as great as in milzbrand.

Among pigs foot disease was common, and those driven to markets suffered exceedingly. Where treatment and rest were allowed they soon recovered. Among dogs rabies was prevalent in many districts of the Frankfurt department.

Among fowls there was noticed, in and around Berlin, an epizooty which has been described by the veterinarian Halbach. It affected hens, geese, and ducks. They became dull, moved with difficulty, separated themselves from the healthy, and retired to out-of-the-way places; they crouched down, ate but little; their red combs became pale or blue; the feathers became soiled; the eyes sank in their orbits; and from the beginning of the disease till their death there was diarrhœa of a grey, white, green, and watery matter, accompanied by painful straining. Great thirst was manifested. Death took place in many in a few hours; in others, in twenty-four, thirty, or forty-eight hours; but they seldom lived longer than three days, or, if they did, convalescence took place, which was most unusual. An examination soon after death showed the skin to be as in health—the flesh firm and red; the crops and stomachs were more or less filled with food of a natural consistency; the whole of the intestines externally looked as if injected with blood, but their interior was healthy, the mucous membrane only being softened, and covered with a dirty grey mucus. The contained fluid was of a variety of colours and consistency, and mixed with much mucus. The liver was healthy, so were the other viscera. The pathognomonic features of this deadly disease were the never-ceasing diarrhœa, and the rapid sinking of the vital powers. It appeared in March and April, and nothing was

known as to its causes or its contagiousness. Remedial measures were of no avail.¹

Professor Prinz says of Saxony: 'The febrile foot-and-mouth disease among cattle, sheep, and swine was noticed at first among the home cattle only as an infectious disease, but later it spread over the whole land. The infection followed the introduction of droves of strange swine from Bohemia and Silesia at the end of May and beginning of June, which contaminated the animals they met. The selling these animals in small lots caused the malady to break out in numerous farms, often wide apart, where they were bought for fattening. The only thing that favoured the rapid suppression of the disease was the fact of the cattle not having yet been turned out to graze in the fields, which allowed proper isolation to be effected. In September and October the same disease broke out among the cattle in many places, sometimes only in individual farms, and at other times among all the farms in a locality, without any infection from without—at least, not by strange swine. The outbreaks occurred in the stalls where many animals stood, though not simultaneously, but gradually, as with contagious diseases. The symptoms were different slightly to those in which infection could be traced. The animals—particularly the cows—eight days before they were seized, refused their food for a short time, and gave a smaller quantity of thick milk. When they again began to recover their appetite, and the other symptoms of gastric irritation had disappeared, they commenced within a given time to slaver and go lame; so that now the local signs of the affection became apparent in the mouth and feet. Frequently in well-fed milking cows an eruption of vesicles appeared on the teats of the udder. The origin of this later seizure was attributed to the animals having eaten the white cabbage (*Brassica oleracea capitata*), especially the leaves. This vegetable had been grown in the fields this year, and rapidly became putrid. The reporter of this asserts that in many stables the milk cows took the disease when fed on

¹ Sanitätsbericht der Provinz Brandenburg, 1834.

these cabbages, which their owners had stacked for winter fodder.

‘The cow-pox, if one may judge from the nature of the fictitious inoculations, appeared in the month of July independently of the foot-and-mouth disease, or other mammary eruptions. Young cows which had but lately calved were most frequently attacked; they were first dull and languid for some days; then there appeared upon the teat and upon the udder hard round knots of a deep red colour, which were painful and about the size of a half hazel-nut. On the second or third day after the formation of these tumours the epidermis was raised in the shape of a flat pustule, which contained a blueish-grey lymph. These pustules on the day after they had appeared often burst, and gave vent to a thick ropy pus. On the fifth day the teats were very sensitive, especially when the animals were milked, and the pustules become covered with thick scabs. In addition to this there arose on the teats and the mammary gland small pustules which soon disappeared, often to be succeeded by other crops in other places. From the eighth day after the appearance of the first pock the sensitiveness began to disappear, and the scabs to fall off, leaving deep red depressions. The animals then showed much itchiness in this region, and eagerly licked their udders, and after several weeks there came small bristly warts, which were permanent. The course of this cow-pox was therefore shorter than the real cow-pox, which, according to old authorities, is the case. Some modern veterinarians who will not admit this invariableness in the nature and course of the true pock, are somewhat borne out by the fact that it broke out in some gradually and repeatedly. Nevertheless, several doctors in this neighbourhood have attempted the vaccination of children with the matter obtained from these pocks, but without result; and the same failure has been noted when cattle were inoculated.’¹

On the Elbe, at Magdeburg, the following report is made. ‘In the summer of 1834, the milzbrand, frequent as it usually is in this busy region, bore this year so virulent a

¹ *Frinz. Clarus und Radius. Beiträge*, vol. ii. p. 78.

character, and ran so rapid a course, as no one remembers. It attacked animals of all classes, ages, and sex; and in many instances even mankind. At its commencement it was most acute, for the first victims died without showing the least symptoms of disease. This was the case not only among cattle, but also among horses and sheep. Even the game in the woods was not spared, and in the forest more than one hundred stags are said to have been found dead from this disease. Later, its course was less rapid; the animals were for a longer time ill without manifesting any striking symptoms, holding out for from twelve to twenty-four hours or two days; one horse died on the fifth day. Low-lying places—such as those situated on the borders of rivers and streams, or morasses—suffered most, while other places not far from these, but whose situation was more favourable, were more tenderly visited. As to the time, in July only a few isolated cases occurred; with the arrival of August the mortality was more considerable, and towards the end of that month and beginning of September it assumed its greatest virulency. Most of those seized died during the night or in the morning; fewer died at midday. Late in the afternoon the early symptoms showed themselves, especially among cattle at pasture, and these succumbed that evening or during the night. The causes of this fearful disease cannot possibly be attributed to such unimportant influences as would be found in low-lying places—they deserve more attentive investigation than they have hitherto received, in order to discover them. The difficulties, however, are so great that they have not yet been overcome; hence the various opinions as to the origin of the milzbrand; at one time it is sought for in the weather, at another in the locality, the fodder, the water they drink, or even in unknown cosmical influences.

‘In regard to this disease, according to the opinion of the reporter, the continuous heat and drought of the summer of 1834 was only a predisposing cause; for the weather was everywhere in the month of May of an equable character, and the disease first began to show itself in a malignant manner in August, and increased by degrees until in September it had

attained its greatest severity. There were, nevertheless, many places which, during the raging of the malady, were spared. In severely attacked localities there were herds which did not lose a single head of cattle. It is clear, therefore, that the pestilence only showed itself in those quarters where, in addition to the predisposing causes, some special exciting cause was brought to bear. This, however, lay, as Herr Ziegenbein avers, in the state of the fodder which the animals consumed, both at pasture and in their stables; for to all appearance this everywhere was in an unhealthy state through the bad weather, being as if mildewed. A special indication as to the operation of this fodder on animals is made plain to the attentive observer by the frequent occurrence of colic, diarrhœa, and a state bordering closely on inflammation of the intestines when they were fed on it; and in other cases there arose but too frequently all the varied forms of anthrax. In an outlying farm where cattle and three-year-old horses were fed on green and mildewed lucerne for three or four days, two of the oxen died from milzbrand, and three of the horses were attacked, of which one only was saved with great difficulty. When the remaining animals again received their healthy fodder the malady did not return. In another farm, where young cattle from one and a half to two years old were fed upon dry forage, they remained healthy; but when, however, they were sent to pasture for three days after the harvest, one morning two were found dead in the stable. On being once more brought to dry fodder and kept from the pasture, no further casualties occurred. On one domain the disease broke out among the herds through their being fed on damaged clover, although it was varied with buckwheat, and later with tender green vetches; and preventive bleedings, with some other measures, were resorted to, such as setons, the animals being bathed and made to swim, and all kinds of internal remedies given. It was not until all these precautionary means had been set aside, the setons removed, and the cattle were receiving one half allowance of green fodder and another of good hay, with plenty of good water in their stables, that the disease suddenly ceased.¹

¹ *Gurlt und Hertwig. Magazin, vol. i. p. 456.*

In the Russian steppes, from 1833 to 1835, Flerow noticed an epizootic disease among cattle which the Tartars termed *malik*, and which he thought a different malady to the Cattle Plague. 'Malik is a Kalmuck word, which, according to Flerow, means a malignant or inflammatory fever (*febris maligna, typhus putridus epizooticus*) that does not attack isolated animals, but large numbers, and passes from one place to another. If it breaks out in a district, it spreads over the whole country until it has run its course, when it directly passes to another, and from thence travels to another place. This is the character of the plague named "Malik." Such conditions attended the disease which Herr Flerow witnessed in 1832, in a district of the town of Serpuchow, and which prevailed as far as the Astrackan border, where the cattle were yet quite healthy. When, however, in consequence of the failure in the crops, the inhabitants of Little Russia were compelled to drive their cattle to the more distant steppes to winter, the disease showed itself; but at the approach of spring in 1834, and owing to the profusion of good herbage, it entirely ceased. In the same manner, according to the reports of Flerow, the "malik" broke out in an equally destructive form along the Caucasian frontier, following the course of the river Terek and Malki. Here it was so virulent that of the animals attacked with it more than one half died. In the first period of the "malik" the cattle appear much depressed, remain behind the herd, lose their appetite, hang their heads and ears, have profuse salivation, but are otherwise to all appearance healthy. The breathing is slow and feeble, and in all their movements debility and languor are plainly perceptible. In the inflammatory stage or period, the symptoms are more palpable and violent. The loss of power is very remarkable; so much so, indeed, that the sick animal never gets up if lying, or if standing never moves from the spot. The breathing becomes quickened, but short, strong, and jerking; the eyes look inflamed and are tearful; the gaze is fixed on any object; from the mouth and nostrils flows mucus, which, however, has no smell; the tongue is white but not coated; the gums and palate are inflamed; the animal exhibits violent

thirst, the horns and ears are hot ; in a word, there is violent fever. In this stage there is already diarrhœa, which is sometimes mixed with blood—or, on the contrary, constipation or meteorization. In the third stage the animal is continually lying with the limbs contracted, the head drooping, and closed and suppurating eyes ; the breathing is difficult and intermittent ; there is much groaning, and the breath is stinking ; the saliva is profuse and is also strong-smelling ; from the nostrils flows a fluid which is often mixed with blood ; the mucous membrane peels off the tongue in considerable pieces ; the urine is foul-smelling ; the fæces are stinking, and black or yellow-coloured, consistent or fluid, and mixed with mucus. If there is constipation much tympanitis is observed, which is relieved by the passage of flatus. In this condition, which betokens an utter suspension of all the functions of the intestinal canal, the animals usually die. Even before death the birds of prey fly about the unfortunate animal and peck out its eyes, or tear any other parts which they can get at. The principal appearances which were noticed after death, were the following : the muscular system was much redder than in healthy animals, especially in the vicinity of the bloodvessels. The blood had a very dark colour like tar ; in the brain the vessels were congested with dark red blood. The lungs, externally and internally, were of a yellowish colour, and softened as well as filled with a frothy blood, but more usually with a foamy mucus. The nostrils and air-passages in general were filled with a blood-tinted frothy mucus, especially about the larynx.

Both the heart and large vessels contained black coagulated blood ; in the mouth, upon the gums and palate, as well as about the tongue, the mucous membrane was normal, but upon the lips it had become separated. This membrane within the œsophagus was very much inflamed ; in the first three divisions of the stomach there was a quantity of pulpy food, but no other noticeable object or sign ; in the smaller intestines of some animals there were traces of gangrene, particularly in the duodenum ; the large intestines in those animals which had suffered from diarrhœa or dysentery were much more inflamed than is usually the case. The liver was inordinately

enlarged, dark within and without, looking as if it had been cooked, and containing black thickened blood in its capillaries. The gall-bladder was much distended with black, or greenish-yellow-coloured bile. The Kalmucks assured H. Flerow that rupture of this viscus occasionally took place. The spleen, like the liver, had an unusually dark colour, was softened, and on being cut into exuded a spumy blood. The kidneys and bladder were not changed, but the urine contained in the latter had a bad odour.¹

Mr. F. Good describes an epizoötic disease among deer in England, which from time immemorial had broken out at irregular intervals and swept off thousands of these animals. It appears to have been an inflammatory fever, more particularly implicating the brain and its coverings. 'Colonel Horner, of Mells Park, about twelve miles from hence, has fine herds of deer, but since April last no less than sixty head of them have died of a malady of a very peculiar nature. Yesterday I received a letter from the medical practitioner of that place, desiring me to come over and examine into the affair. I immediately proceeded thither. The first subject I was shown was a fine buck, which had died in the climax of the disease the previous evening near a stream of water. The keeper informed me that, when attacked with the disease, the animal ran furiously at everything, butting his antlers and head against the paling, trees, walls, or whatever opposed his onward course, and expired in three days from the commencement of the disease. He also informed me that the appearances were the same in every case which he had examined after death, excepting in the larynx.

'I then proceeded to a post-mortem examination. I first dissected out a portion of the trachea, and found the membrane lining the larynx very highly inflamed, and the inflammation extending as far down as the bronchi. The epiglottis was similar to a piece of scorched leather; the root of the tongue was also highly inflamed. I then proceeded to the stomachs, and I found the rumen fully distended with food—viz., grass, leaves, pieces of chestnuts, sprigs of trees, etc.—with

¹ *Flerow. Gurlt und Hertwig. Magazin, vol. iv. p. 283.*

a patch of slight inflammation on the cuticular coat, but not fully developed. There was also a quantity of food in the duodenum ; the termination of that and the commencement of the jejunum were also inflamed ; and in the other intestines, which were quite empty, I found patches of inflammation in detached places. I believe there had existed an obstruction in the bowels. The liver I found very much inflamed, particularly on the concave surface of the right lobe, where there were two or three enlargements of the ducts containing a quantity of flukes. The heart was very much enlarged, and the lungs exhibited patches of inflammation ; the kidneys were in an unhealthy state. Lastly, I proceeded to the brain, and observed between the tunica arachnoides and pia mater patches of extravasation and inflammation, both on the cerebrum and cerebellum. I did not observe anything peculiar in the ventricles, nor in the spinal cord.

‘The next subject I was shown was a live buck strongly affected with the disease. He was recumbent when we approached him, looking wistfully round, and nibbling his side near the abdomen, as if in violent pain. As I approached he sprang up, looked very wildly, made a gurgling noise in the throat, and bolted at the top of his speed over and against everything in his course. We pursued him on horseback for a considerable distance, and when we reached him we found him near a stream, butting furiously against the ground, foaming at his mouth, and apparently endeavouring to drink, but I think he could not. As we neared him he bolted forward again amongst the herd, still making this gurgling noise: the herd immediately separated in great terror. We still pursued him, and ultimately he was ordered to be shot for my inspection. He was accordingly shot through the heart from behind the left shoulder. I then proceeded to dissect and examine him also, and found the appearances much the same, excepting that the membrane lining the larynx was not so *highly inflamed* as in the former subject.

‘The park has been stocked with deer for the last fifty years, so that it cannot be thought that the herbage had any effect. A suspicion had arisen that they were poisoned, but

from the slight appearance of inflammation in the stomach I could not entertain that opinion; yet I did not analyse the contents of the rumen. There were Scotch cattle and sheep grazing on the same herbage, but none of these have exhibited the slightest symptoms of the disease. I should mention that the practitioner I have spoken of had examined many brains previously to my visit, and had found them all more or less inflamed. The keeper told me that one of the diseased animals had bitten him in the hand.¹

Influenza was epizootic among horses in England this year. Mr. Spooner, of Southampton, writes: 'In the early part of the summer of 1834 I had an opportunity of seeing its ravages, chiefly amongst coach-horses, to a great extent. The weather in May of that year, it will be remembered, was unusually hot, and to this cause in great measure I attribute the spread of the disease, as well as the peculiar character it then displayed. The symptoms were almost invariably at first a failure in the appetite, to which succeeded a dull and heavy appearance; and if the animal was put to work, it was with difficulty he reached his journey's end. The pulse was found quicker than common, sometimes slightly so, at other times in a greater degree, and it was often full and distinct. In a very few hours the symptoms all became greatly aggravated: the mouth felt burning hot; the eyes half closed; the pulse increased frequently; and the appetite entirely gone. The mucous membranes appeared highly injected, and the dung slimy. The owner had had a great number of horses ill, the majority of which had died. These cases occurred at a distance from my residence, and were under the care of another practitioner. I saw some of them, and examined a few after death. The post-mortem appearances of these, as well as others that died under my own care, invariably presented inflammation of the mucous coat of the bowels; this membrane, indeed, could be rubbed off with the slightest touch. The liver in three cases out of four was considerably affected, of a pale texture, and easily broken down. The kidneys were very frequently extensively diseased, and in some cases their substance was

¹ *F. Good.* The Veterinarian, vol. vii. p. 496.

altogether disorganized. The windpipe and larynx, particularly the latter, generally presented some degree of inflammation, but not to any great extent ; indeed, the inflammation of these parts seemed to be of a secondary character, or otherwise to have been relieved by the metastasies of the disease to other parts. In some of the cases nearly all the lesions I have mentioned were noticeable, presenting disease of four or five organs, each of which would have apparently been sufficient to have produced death.¹

In Saxony, distemper was extremely widespread and fatal among dogs, and they also suffered to a like degree from a bilious fever and rabies.²

In Ireland it was reported : ‘The sheep are suffering from the rot, and large numbers of them dying’³ in the counties of Galway and Roscommon.

An epizoöty appeared among swine in Aveyron and its neighbourhood. It was rapidly fatal, often killing all the inhabitants of a piggery in from twelve to fourteen hours, often in less than half that time. The symptoms were sudden loss of appetite, small and frequent pulse, haggard eyes, inflamed conjunctivæ, mouth open, red, and filled with foam ; the respiration laborious ; the cries plaintive ; convulsions, paralysis of the hinder extremities, and involuntary discharge of highly fœtid fæces. When these symptoms were present, death was inevitable in a short time ; but when the disease was less rapid, the symptoms were milder, and medical aid was useful. Pregnant sows escaped the attacks, but as soon as they had farrowed they lost their immunity, and they and their young were seized. Leprous swine were exempted. The epizoöty appeared at all seasons of the year, but was most malignant in the summer and autumn. Highly contagious it was supposed to be, and from experiments then made, it was found that it could be reproduced in sheep and other animals by inoculation. The flesh when given to dogs caused no ill effects. The causes were supposed to be

¹ *Spooner*. On the Influenza of Horses, p. 15.

² *Prinz*. *Clarus und Radius*. Beiträge, vol. ii. p. 85.

³ The Morning Register.

unwholesome food, ill-ventilated sties, want of attention to cleanliness ; and exposure to heat, wet, or cold, were supposed to be predisposing causes. Some peculiar miasmatic influence was believed to excite the development of the malady.¹

A.D. 1835. An eruption of Mount Vesuvius. In England, in the month of June, hail and thunder storms did much damage, and in August the shock of an earthquake was felt in the county of Lancaster. Earthquakes were very frequent on the Continent, and caused much destruction of life and property. A shower of meteorolites fell on the frontiers of Wallachia. Epidemics were rife among the human species in Europe, and North and South America ; cholera in particular was fatal at Leghorn.

The diseases of the domestic animals were not very uncommon or wide-spread. In Lithuania, in the years 1835 and 1836, the prevalent epizooties were hæmaturia, angina, and contagious pleuro-pneumonia among cattle, variola among sheep, and milzbrand—a disease which rages as the most formidable malady every year in the Minsk Government. Filaria in the bronchial tubes destroyed great numbers of calves.²

In Eastern Prussia there were some unfavourable reports as to the health of the lower animals. In Friedland and Mohrunger, the milzbrand spared scarcely any class of animals, and sheep were far more than usually attacked by ‘raphania.’ Swine perished in large numbers from a rapid and deadly quinsy. Wild animals suffered equally with the domestic, and according to Dr. Hansbrand, of Braunsberg, it was a disease analogous to milzbrand which destroyed great quantities of moose-deer. Dr. Glede, at Heilsberg, attributes the frequent occurrence of milzbrand to the drought of 1834, which dried up the ponds and water-courses, and caused a scarcity of fodder. At the same time the animals employed in agricultural operations were severely strained, in having to plough up the scorched, hard-baked land. To these causes were added the driving the cattle to the low-lying woody

¹ *Recueil de Méd. Vétér.* 1834.

² *Gurlt und Hertwig.* Magazin, vol. vi. p. 447.

pastures which had previously been marshy land, but were now dried up, and these had sometimes to be reached by taking them along dusty roads for two or three miles. But other causes must have been at work, for Dr. Gisevius found that in the parish of Elsau, even among those animals which were kept in stable, cases of milzbrand were frequent, and that the mortality was more considerable in this district than in any other ; for out of one herd of one hundred and twenty-eight cattle ten died in two nights, and in the village of Porsitten out of a herd of seventy-one there died seven. In this place the disease attacked the village herd, and nineteen fatal cases occurred. This milzbrand attacked horses less frequently than other animals, and though due, it was said, to telluric and atmospheric influences, yet it was allowed that contagion had much to do with its extension.

In August and September many geese died from a kind of anthrax. In a village of Ortelsburg, according to the report of Dr. Zuch, all the fowls and ducks, and no less than three hundred geese, died suddenly, after suffering for some days from violent diarrhœa. They often died when eating with an apparently good appetite : they gave a painful cry, bent their head and neck to the earth, threw themselves upon their back, convulsively moved their feet and wings, and died within eight or ten minutes. On dissection the liver was found enlarged, and a remarkable inflammation of the intestinal tract and brain was noticeable.¹

In Pomerania the health of the domestic animals was satisfactory, though, owing to the drought, cows gave less milk and were more difficult to fatten. Only towards the close of the year were catarrhal and gastric diseases remarked.

In Brandenburg, in January, abortions among cattle were usually frequent in the brandy districts, in consequence of the forage given them being mixed up with brandy lees. During the frosty weather pigs died from throat-anthrax. Rabies was prevalent among dogs in several districts in this

¹ Sanitätsbericht Königsberger, 1835.

month. In February, small-pox and the foot disease raged among sheep, and the lung disease in cattle. In March the same diseases were prevalent. In April rheumatic inflammations, coughs and catarrh were prevalent, coincidently with the foregoing disease. In May, in addition to the above-mentioned diseases among sheep, horses were affected with mange, and glanders. Lambs had tape-worms, and mad dogs were still common. In June, small-pox was very rife among sheep.

In July pleuro-pneumonia raged among cattle, and small-pox and foot disease among sheep. Milzbrand was not unfrequent among cattle and swine. In August pleuro-pneumonia was epizoötic among cattle; these animals also suffered, with swine, from anthrax, and canine madness was yet frequent. In September acute rheumatism and laminitis were especially noted among horses, from over-feeding on new rye. Among cows, there occurred that inflammation of the skin termed grease, with foul exudations from the skin, which inflammation extended above the knees and hocks, and as far as the udder; it was accompanied by loss of milk and great emaciation. Dysentery, foot disease, and 'turn-sick' were common among sheep. The lung disease yet raged among cattle, and some mad dogs were seen. In October the lung disease among cattle continued at Berlin, and a mortality appeared among poultry, ducks, and other fowls. The lung disease was still spreading among cattle. In November the foot disease prevailed among sheep, the staggers among lambs, and the pleuro-pneumonia among cattle. To such an extent, indeed, did the latter malady prevail that an interdict was placed upon cattle and fodder in the town of Bernau and several villages. In December the lung disease continued in some villages of the Frankfurt district, and the improved flocks of sheep suffered from the foot disease. Sheep-pox also showed itself in several places. . . . As in former years, the milzbrand appeared, though not so seriously as might have been expected, and seemed to be more dependent on the influence of the weather, only appearing in July and disappearing when the cool season set in. . . . The fatal

plagues which for some years have been observed to attack poultry, showed themselves again this year. Nothing could be learned as to the nature or the causes of these maladies, and therefore nothing could be devised in the way of preventive or remedial measures. The foot-and-mouth disease and the epizoötic ophthalmia which were so frequent and wide-spread in previous years, were in this year very rare, and only mentioned in the reports from two districts.¹

In Prague it is recorded: 'No intelligence of unusual diseases among the domestic animals was received, and the only epizoöty of any moment was the lung disease among cattle. Among poultry I noticed anthracoid disease. In a house where these animals were well cared for, fat capons and other fowls died as if struck by lightning. The examination showed in the plainest manner that they had perished from this affection. The blood was as black as a coal, and coagulated in the veins of the abdominal organs; the crop and stomach were filled with soft, but undigested grain, and the lining membrane of these organs was black and softened, and the bodies had an extremely foul smell; the muscles were pulpy and dark-brown, and the muscles of the abdomen were overlaid with yellow, gelatinous, unhealthy fat. According to reports, on the 7th April anthrax disease broke out in several villages, and a considerable number of poultry, geese, etc., died. It may calm the public mind, however, to know that it is impossible to sell these diseased animals in the town, for immediately after death the flesh of the fowls becomes so disorganized and bad-looking, and they have such a foul odour, that the sellers are defeated in their object.'²

In Saxony, Prinz reports: 'Among ruminants and swine, the "foot-and-mouth disease," which had been so wide-spread in the past year, did not recur in this, probably because the traffic in foreign, and especially in Hungarian, swine was stopped; and also partly because the traders took more precautions, while the price of young home-fed pigs was much depressed in consequence of the scarcity of food. . . . In

¹ Sanitätsbericht der Provinz Brandenburg, 1835.

² *Clarus und Radius*. Beiträge, vol. iii. p. 105.

January the epizootic diseases bore a catarrhal rheumatic character, particularly among dogs, and were complicated with bilious affections. The prevalent maladies were catarrhal fever, rheumatic ophthalmia, and colic among horses; anginous complaints among various classes of animals, and herpetic eruptions among dogs and cats. In February the character of the affections was more purely catarrhal, or only complicated with disorders of the lymphatic system—so that besides the feverish and inflammatory complaints, there especially appeared among horses the so-called strangles (*druse*) or angina, which was accompanied by the formation of abscesses about the throat, and even under the chest and abdomen. In March diseases bore the same character during the first half of the month, but during the second half they were of a catarrhal, rheumatic, and bilious type. Among horses there appeared a bilious chest quinsy (*brustbräune*), or the so-called chest disease (*brustseuche*), which, in animals already predisposed, was very fatal: sometimes by general paralysis of the bloodvessels and decomposition of the blood, sometimes by effusion and congestion of the blood in the pleura, or sometimes by a determination of the blood towards the kidneys, or even to the organs of generation, through the medium of the lumbar vessels, or by internal hæmorrhage induced by rupture of the liver or spleen; or it combined itself with erysipelas of the skin, and then were developed grease, thrush, and herpetic affections (*flechten*). This influenza, though it may have disappeared from the larger stables, yet maintained itself in the smaller establishments of the town and neighbourhood until the month of August, and even in December it recurred again. In April the operation of the above-described constitution extended itself to cattle, so that inflammation of the womb (*metritis*, *gebärmutterbrand*) was not rare among cows after calving. In May the same characteristics were predominant. In horses rheumatic colic was frequent, and this rapidly passed into a gangrenous inflammation of the mucous membrane of the intestines. This phenomenon was also noted among poultry. In the months of June and July there appeared, besides the above-named

feverish and protracted affections, a mucous discharge from the ears, nose, and vagina of many dogs. Glanders appeared in four horses. In August and September catarrhal affections still prevailed, but more of the digestive than of the respiratory passages. Vomiting and dysentery were prevalent, especially among dogs; among horses, colic; and among all animals, diarrhoea. In October and November the sickness was unimportant, and had no special characteristic. As, however, in December winter weather set in, contrary to expectation, and frequent changes of temperature were noticed, with alternating winds and dampness, catarrhal rheumatic affections were again rife, and among the horses of the large stables the peculiarities and course of the spring influenza were again perceptible.¹

For Austria, Knolz reports: 'The health of the working domestic animals was not so satisfactory this year (1835) as in the past year. The most destructive, and therefore the epizoöty which caused most uneasiness, was the rinderpest, which raged in the districts bordering upon Moravia and Hungary, in fourteen places, from the 10th of May, 1835, to the 30th January, 1836. Milzbrand was sporadic during the excessive summer heat towards the end of July and beginning of August, but in a very narrow circle. Among sheep variola raged in ten localities.'² (It was also prevalent in mankind.)

In Styria, Von Vest reports: 'Three persons were bitten by a mad wolf in July, in the medical district of Windisch—Feistritz. Of these, two died of hydrophobia fourteen days afterwards. There was no epizoöty of any importance among domestic animals, with the exception of a bilious fever among pigs. The few cases of milzbrand which occurred among cattle, and of quinsy among pigs, were purely sporadic.'³

In the Tyrol, Ehrhart says that the epizoötics were contagious lung disease among cattle in the Upper and Lower Innthal, and an inflammatory lung affection in the districts of

¹ *Prinz. Clarus und Radius. Beiträge*, vol. iii. p. 113.

² *Knolz. Oesterreich. Med. Jahrbuch*, vol. xxv. p. 186.

³ *Vest. Ibid.*

Botzen and Tyrol.¹ In Dalmatia milzbrand and hæmaturia were epizoötic among cattle, and rot and small-pox among sheep.² In Lombardy the 'foot disease,' 'mouth disease,' milzbrand, and hæmaturia, were the maladies prevalent among the domestic animals.³

On the 15th of February of this year, the government of the Thurgau Canton ordered the destruction of all the foxes, in consequence of rabies having appeared among them since 1834. 'One morning, towards the end of September, 1834, a fox entered a field belonging to a farmer at Bischoffzell, and seized the shepherd boy by the breeches and shook him; afterwards it attacked an ox, and was subsequently shot by the farmer. In the beginning of October I shot a fox near Neukirch. I was particularly struck with the behaviour of this animal, and with its tameness; for it either could not, or would not, run away, and appeared to have partially lost the use of its hind-legs. Johann Wartenweiler, of Schweirsholz, found a fox near Bischoffzell, which he killed with his stick. It could not drag its hind-legs after it. On removing the skin, no trace of shot or other injury was visible. Two days later, Joseph Diepold, of Hackborn, also found a dead fox, which, however, he believed had been shot. Jacob Müller, a servant of the district judge Kropf von Buhweil, killed a fox in the Sulgerau, in November, with his whip-stock. On removing the skin, he found no trace of any injury beyond that caused by himself. On the 20th of November I found a dead fox in a morass near Buhweil, rolled up like a ball, and frozen in the grass. I examined it carefully, but found no trace of any wound. It had several pieces of old wood in its mouth, and had been seen by a woman ten days before at Schönholzersweiler, gnawing old timber. The animal placed itself in a threatening attitude towards this woman, and was only driven off when her husband appeared. Lieutenant Habisreutinger found a very large fox near Hosenruck, which was lying dead in a ditch, and without any wounds. The same gentleman shot a fox near Wuppenau, which showed a

¹ *Ehrhart.* Oesterreich. Med. Jahrbuch, vol. xxv. p. 186.

² *Weber.* Ibid.

³ *Comolli.* Ibid.

disposition to bite his dog; nothing abnormal was found about this animal. Jacob Alispach, of Heiligenbrunn, Buhweil, found a dead fox on the 3rd of December. On the removal of the skin no trace of injury could be detected. Herr Müller, in Sorrenthal, four weeks ago, shot a fox before the doors of his factory, the animal having shown a disposition to attack the work-people.¹ In the Canton of Zurich rabies was observed in a cat and a horse, and in Lausanne sheep suffered from this disease.²

At Lyons and its neighbourhood, though the diseases of the domestic animals were not very numerous, yet it is remarked that bronchitis or pulmonary catarrh had attacked many horses and dogs during the springtime and commencement of the summer. It was not a simple affection, but was often complicated with coryza and swelling of the submaxillary glands, parotidean abscess, and angina. A mucous or gastric fever also affected horses from the autumn until the spring, and then the hot weather setting in, it assumed a new character in the visible mucous membrane taking on an icteric or bilious tint, and the disease then bearing all the symptoms of a bilious fever.³

Becker, veterinary surgeon to the 8th regiment of Prussian cavalry, observed an interesting epizooty of the so-called 'yellow' or 'bilious fever' of dogs, in the valley of Luxemburg. His description is particularly worthy of notice, from its bearing upon the great epizooty of 1761, and Prinz's description of the Dresden outbreak of 1827. He remarks that epizootic inflammation of the liver is a disease which frequently attacks dogs in southern climates, and particularly those which have sudden alternations from damp and cold to heat. His observations were made from April to August; when in the valley there was an oppressive sultry damp temperature, and on the hills a cold penetrating wind and chilling currents of air.⁴

An epizooty appeared among fowls in Eastern Prussia, in

¹ *Habisreutinger*. Archiv. f. Thierh. Schweiz. thierärzt. vol. vii.

² *Ibid*.

³ *Recueil de Méd. Vétér.* vol. xiii. p. 1.

⁴ *Becker*. Magazin für die gesammte Thierheilkunde. 1838.

the districts of Rosenburg and Strasbourg, which destroyed many geese in the months of August and September.

In France a similar disease was prevalent. 'From the month of October, 1835, we were aware that in many communes in the neighbourhood of Alfort a remarkable mortality among poultry had declared itself; many proprietors having assured us that they had lost great quantities even before they knew they were ill. But from the following month we heard no more of this fatality, and it was not until the end of March and the commencement of April of this year (1836) that we learned the disease had recommenced, and until the month of October it had made great ravages. We have also been informed, by the letters addressed to us, that during the months of March and April last it has reigned in many of the communes of the departments of the Seine, the Seine-et-Oise, the Eure-et-Loire, the Seine-et-Marne, etc. . . . It attacked all fowls, yet the hens appeared to be much more easily and frequently affected than the ducks or geese; the pigeons were not often affected. The invasion of the disease was sudden—so much so, that a fowl often died before anyone had time to suspect it of being ill. In some instances the disease lasted for some hours, or even for a day; but its termination was always fatal, except in very rare cases. When a sick fowl was observed, the following were the symptoms: slow movements, dulness, diminution of the appetite, or sometimes complete loss of it; ardent thirst, and the animal often seeking to appease it; the wings trailing on the ground, the head carried low, and the neck flaccid; the crest a little darker in colour than usual; nothing particular in the defecations. In some localities, among all the fowls affected there has been observed a particular noise in the breathing. After these symptoms—which in some cases only last a few minutes, in others some hours—succeed the phenomena of coma and complete insensibility; the crop, distended by the last-ingested food, protrudes beyond the breast, and becomes the most certain symptom of approaching death; indeed, death takes place very promptly, and without much struggling. Many people have remarked that the affected fowls die much more

frequently during the night than the day. With the ducks, geese, and pigeons the disease offers pretty much the same symptoms; only in its duration is there any difference, it lasting longer in them than in hens. An examination of many fowls which have died from the disease discloses the following results: The flesh and the fatty tissues are a little discoloured, but yet firm enough; the crest is a bright-red, and not a dark-violet colour, as in many other epizooties; no matters flow from the natural apertures. The mucous membrane of the œsophagus and the crop are much reddened, and the last-named receptacle is filled with grains or other aliment which has undergone no alteration. The succenteric ventricle shows less redness than the crop, and contains no food. The gizzard is, as is usual in health, full of grains and small pebbles; its walls do not offer any alteration. Some faint red patches are observed in the intestinal tube. Nothing particular is found in the oviduct, nor yet in the organs of generation. The lungs in some animals appear infiltrated with a blood-coloured serosity, yet when put in water they float. There is no notable alteration in the heart, pericardium, liver, etc. The brain is pale, and looks infiltrated. All that we can say regarding its etiology is, that if, as all are inclined to believe, it is due to general causes, the same as other epizooties, some particular circumstances singularly influence its development; for in some localities it is far more severe where the fowls have been exposed to damp and bad management, and, above all, where they have nothing to drink but foul water, the drainings of dung-pits, than where they have been subjected to an opposite treatment.¹

In the month of May, 1836, Dupuy observed an epizooty among geese near Toulouse. The post-mortem appearances were: A large number of circular patches of variable extent in the rectum, varying in size from that of a lentil to a five-sous piece, and projecting about a line beyond the surface of the mucous membrane. The other portions of this membrane were remarkable for the great development of its villousities. The whole of the intestinal canal from the gizzard was full of

¹ Recueil de Méd. Vétér. vol. xiii. p. 300.

puriform mucosities, and did not contain any food. The liver was of a bright rose-colour, but preserved its ordinary consistency.¹

Some months before the cholera broke out at Munich, during the summer, a fatal disease appeared among the geese of an extensive breeder in that town, of which three hundred died. When the cholera arrived, this man and his family were attacked, and one hundred and forty-two geese perished. The best-conditioned birds, in returning from feeding, fell, and were unable to rise again, evacuated by the anus a white or greenish fluid, and usually succumbed in about a quarter of an hour.²

An interesting epizooty is recorded as appearing among the horses of the Queen's regiment of cavalry at Naples. It is thus described by Mr. Cantiello, the veterinary surgeon of the regiment: 'Pneumonia, or inflammation of the lungs, has been often and well described by veterinary surgeons; but there was a peculiarity about that which prevailed during the last year (1835) which deserves to be recorded. It was sadly prevalent and fatal, and a great many of the horses that were attacked by it died in a very short space of time. During the month of October, 1835, the greater part of the horses belonging to the Queen's regiment of cavalry were suddenly attacked by an epidemic disease, and they were generally the youngest and those in highest condition that first failed. The earliest symptom, and very sudden in its appearance, was great difficulty of respiration and total loss of appetite. The labour of breathing was sometimes so great, that the animal was apparently threatened with suffocation; the legs seemed to be cramped; the hind-legs were immovable; the posterior part of the frame appeared to be paralyzed, and when the animal was forced to move, the legs could scarcely sustain his weight. The mouth was open, and its membrane of a dark colour, almost approaching to black. The labour of breathing rapidly increased; the flanks beat violently; the nostrils were dilated; the tongue and palate dry and hot, and

¹ *Journal de Méd. Vétér. theoret. et pratique*, vol. vii.

² *Kopp. Cholera-Epidemie in München*, p. 169.

of a still darker hue ; the breath hot and fœtid ; the conjunctival membrane deeply injected ; the pupil dilated, the ears pendent and cold, and the veins of the face distended. There were other peculiarities : the tail was immovable, the mane coming off at the slightest touch ; the hair erect ; the skin dry, and adhering to the subjacent parts ; the urine small in quantity ; the bowels constipated ; the extremities cold ; cold sweats about the flanks and scrotum ; erection of the penis, and general immobility of the animal. The pulse was hard, and little developed at first, but it soon became full and strong. To these symptoms soon supervened a fœtid discharge from the nose, the breath also becoming still more fœtid ; the mouth and body generally cold ; the countenance of the animal having a piteous expression ; the hair standing on end ; the head depressed ; the pupils dilated, and the eyes fixed. The pulse now became small, intermitting, and soft ; the perspiration at the flanks ceased, and death evidently approached. Little could be prognosticated with regard to the duration of the disease, from either the nature or the succession of the symptoms. Some horses died on the third, others on the fourth, and others not until the eighth day from the first attack. There were many, however, which did not survive the first day ; and some, while they were feeding, and with every appearance of health about them, dropped and died as if from apoplexy.

'Post-mortem Appearances.—The mucous membrane of the trachea and bronchi was ulcerated, eroded, and filled with pus. The bronchial glands were enlarged, and turgid with blood, or sometimes suppurating. The substance of the lungs was hepatized and enlarged, and then ulcerated, and softened so that it might be torn with the greatest ease. Its exposed cells were filled either with serous fluid, or with grumous blood and purulent matter, of almost a black colour. The inflammation extended to the pleura, and even to the pericardium and diaphragm. In every lingering case effusion was discovered in the thorax. These lesions sufficiently proved that the disease was essentially inflammation of the lungs, had the difficult breathing, the peculiar character of the pulse, the

coldness of the extremities, and the attitude and motion of the patient left any doubt on the subject. . . .

‘*Causes.*—It may appear singular to some readers that I take this division of my subject last ; but I must confess that I have no certain proof with regard to the cause. It arose not from any peculiarity of temperament, of situation, or of food. This was put most strictly to the test. The water, and the provender, as well green as dry, were scrupulously examined, and proved to be altogether without fault. There was no unusually hard work, no want of cleanliness in the stables. The disease was, however, very materially connected with the situation of the stables. It was confined to those horses alone that were exposed to the mountain wind, and the wind blew with unusual coldness and violence from the mountains at that time. This might be taken as a predisposing cause ; it might, as frequently as otherwise, be the exciting cause. In many places in the country, where there was the same exposure to these winds, there were similar diseases ; and as soon as the wind changed, and the weather became milder, the disease gradually declined, and at length ceased altogether. In cases of a milder form we can often readily trace this atmospheric agency, and the vital organs are not exempt.’¹

There was a disease among fresh-water fish during this and the two following years. The following is the account furnished by Mr. Thompson : ‘I have been informed by Mr. Wm. Todhunter, formerly resident at Portumna, on the banks of Lough Derg (Galway), that about the 20th of June, 1835, three eagles visited the shores of that lake, attracted apparently by immense quantities of perch, which, with some trout and pike, ascended in a sick state to the surface of the water and died there. Early in the month of July, in 1836 and 1837, when the fish likewise died in numbers, two eagles visited the place, and continued a similar time. In 1838, but few fish died, and the eagles, which made their appearance about the end of July, stayed but for a short period. My informant attributed the fatality of the fish to the “hot

¹ *V. Cantiello.* The Veterinarian, vol xii. (1839), p. 176. Giornale delle utili. Conoscenze. Napoli, 1836.

weather," stating that where they died the water was but from one to three feet in depth, and consequently would be much acted on by the heat. The lake generally is shallow, its average depth being about eight feet, and there is no apparent current through it.¹ To this is added the following note: 'This fatality was probably owing to an extraordinary diminution of the proportion of oxygen in the water of the lake. MM. Aug. and Ch. Morren, in their most interesting "*Recherches sur la Rubéfaction des Eaux et leur Oxygenation par les Animalcules et les Algues*," state, to quote the words used in noticing their memoir in the "*Annals of Natural History*," vol. xii. p. 207, that "At times they have found the proportion (of oxygen) so low as eighteen, nineteen, or twenty per cent., and the consequence has been the destruction of the greater part of the fish by asphyxia. On the 18th of June, 1835 (the very time when the fatality was greatest in Lough Derg), the greater part of the fish in the Maine perished from this cause; and the same circumstance was observed twice in the pond, which first directed the attention of the authors to the subject of the memoir."'

An earthquake at Concepcion, South America, and great death of fish. 'At the time of the ruin, and until after the great waves, the water in the bay appeared to be everywhere boiling; bubbles of air, or gas, were rapidly escaping; the water also became black, and exhaled a most disagreeable sulphureous smell. Dead fish were afterwards thrown ashore in quantities; they seem to have been poisoned, or suffocated; and for days together the shores of the bay were covered with fine corvinos, and numerous small fish.'² Many cattle were rolled down the sides of the steep mountains into the sea and drowned.³

The same observer informs us that hydrophobia was very prevalent in Northern Chili. When in the valley of Copiapó he writes: 'An order had recently been issued that all stray dogs should be killed, and we saw many carcasses

¹ *Thompson*. *Natural History of Ireland*, vol. i. p. 25.

² *Fitzroy*. *Voyages of the Adventurer and Beagle*, vol. ii. p. 410.

³ *Darwin*. *Ibid.* vol. iii. p. 370.

lying on the high-road.' A great number had lately been affected with hydrophobia, and several men had been bitten, and had died in consequence. On other occasions hydrophobia has prevailed in this valley.'¹ He then adds: 'It is remarkable thus to find so strange and dreadful a disease appearing time after time in the same isolated spot. It has been remarked that certain villages in England are in like manner more subject to this visitation than others. Hydrophobia must be extremely rare on the eastern side of the Andes, for Azara thought it was unknown in America ;² and Ulloa says the same with respect to Quito.³ I could not hear of a case having occurred in Van Diemen's Land, or in Australia ; and Burchell says, during the five years he was at the Cape of Good Hope, he never heard an instance of it.⁴ Webster again asserts that at the Azores, hydrophobia has never occurred ;⁵ and the same observation has been made with respect to Mauritius,⁶ and St. Helena. In so strange a disease some information might possibly be gained by considering the circumstances under which it originates in distant climates.'

Burchell's statement is as follows: 'The hydrophobia, or canine madness, is unknown in these regions ; and indeed in the whole of the southernmost part of Africa. Even in the Cape Colony this dreadful disorder is so rare, that I never heard of an instance of it during the five years of my being in that part of the globe.' This evidence appears to be corroborated by that of other writers. A Dutch traveller⁷ at the Cape of Good Hope, in the beginning of this century, alludes to the dogs there: 'The English have brought over Newfoundland dogs, as well as others of the large and hardy breeds ; but it appears as if the climate will not agree with them, since it is universally observed that they are soon seized with a sort of murrain, from which very few recover. Mr.

¹ *Darwin.* Voyages of the Adventurer and Beagle, vol. iii. p. 436.

² *Azara.* Travels, vol. i. p. 381. ³ *Ulloa.* Voyage, vol. ii. p. 28.

⁴ *Burchell.* Travels in Southern Africa, vol. ii. p. 524.

⁵ *Webster.* Description of the Azores, p. 124.

⁶ Voyage à l'Isle de France. Par un Officier du Roi. vol. i. p. 248.

⁷ *Lichtenstein.* Travels in Southern Africa. London, 1815, p. 14.

Duckett, a well-informed English agriculturist, has made many experiments to introduce other breeds of dogs, but they have uniformly failed. *It is very remarkable that no example of madness among the dogs was ever known in the colony*; an additional proof that this disease does not so much originate in the temperature of the atmosphere, as in other properties belonging to the climate.' Livingstone¹ also adds his testimony: 'In conversation with some of my friends here (South Africa), I learned that Maleke, a chief of the Bakwains, who formerly lived on the hill Litubaruba, had been killed by the bite of a mad dog. My curiosity was strongly excited by this statement, as rabies is so rare in this country. I never heard of another case, and could not satisfy myself that this was real hydrophobia. While I was at Mabotsa some dogs became affected by a disease which led them to run about in an incoherent state, but I doubt whether it was anything but an affection of the brain. No individual or animal got the complaint by inoculation from the animals' teeth; and from all that I could hear, the prevailing idea of hydrophobia not existing within the tropics seems to be quite correct.'

For West Africa we have the evidence of M. du Chaillu:² 'Though most of the West African villages have crowds of dogs, I never could learn of a case of hydrophobia, nor did the natives even know of such a disease as madness in dogs.' Elsewhere, at a later period, he confirms the truth of this observation by quite recent experience, and adds that heat cannot be adduced as a cause of the malady, else it would be prevalent in that part of the world.³ Mr. Clarke,⁴ in 1861, says of the Gold Coast: 'During the whole period of my service in West Africa, no instance of hydrophobia occurred, although hundreds of half-starved mangy curs patrol the streets of the towns and villages on the Gold Coast, and at Sierra Leone.' For the Northern Hejaz, Arabia, we find Burton⁵ writing: 'Hydrophobia is rare, and the people have

¹ Travels and Researches in South Africa, p. 127.

² Explorations and Adventures in Equatorial Africa. London, 1861, p. 221.

³ Journey to Ashango Land.

⁴ Topography and Diseases of the Gold Coast, p. 48.

⁵ Burton. A Pilgrimage to El Medinah and Meccah, vol. i. p. 372.

many superstitions about it. They suppose that a bit of meat falls from the sky, and that the dog who eats it becomes mad. I was assured by respectable persons, that when a man is bitten, they shut him up with food in a solitary chamber for four days, and that if at the end of that time he still howls like a dog, they expel the Ghul (devil) from him by pouring over him boiling water mixed with ashes—a certain cure I can easily believe.' The disease has been witnessed in North Africa. Volney¹ asserted that it was unknown in Egypt, but in recent times it has been seen in that country by Dr. Pruner.² In Algeria it was extremely rare during the first ten years of the French occupation ; now it is very frequent.³

Larrey and Professor Alpinus say it was not known in Syria ; but in the present time this is not correct, for while I was at Damascus and Beyrout, in 1867, I made frequent inquiries, and was informed that the malady sometimes caused much mischief. When a person chanced to be bitten, he was shut up in a room, given but little food, and not allowed to look upon any red-coloured object ; after a certain number of days he was immersed in cold water, and then permitted to go at large.

With regard to the Mauritius, Pridham,⁴ so late as 1846, when speaking of the dogs of that island, adds : ' It is said they have never been known to go mad in this island.' But since that period it is stated that this frightful disease has been imported thence from Bengal.⁵ We have, however, shown that the malady was imported in 1813.

Hydrophobia is a somewhat common disease in India. The Hon. Mountstuart Elphinstone,⁶ when describing Afghanistan and its climate, says of the pestilential wind—the simoom : ' This wind is said to blast trees in its passage ; and the hydrophobia which affects the wolves, jackals, and dogs in some parts of the country is attributed to it.'

¹ *Volney.* Voyage en Syrie et en Egypte. Paris, 1787.

² *Die Krankheiten des Orientes*, 1847.

³ *Boudin.* Géographie, etc., Médicales, 1857.

⁴ *Pridham.* The Mauritius and its Dependencies, vol. i. p. 237.

⁵ *Friorep.* Notizen, No. 48.

⁶ *Account of the Kingdom of Caubul*, vol. i. p. 185.

Mr. Marsden¹ remarks of the dog in the great island of Sumatra: 'Those brought from Europe lose in a few years their distinctive qualities, and degenerate at length into the cur with erect ears, *Kuyu*, vulgarly called the "pariah dog." An instance did not occur of anyone going mad during the period of my residence. Many of them are affected with a kind of gonorrhœa.'

In Ceylon, hydrophobia sometimes rages very extensively, and hyænas are frequently affected.² Forbes³ writes: 'The native doctors acknowledge their inability to cure hydrophobia, saying they can heal the bites, but the gods must do the rest. Three months is the time, after which they consider anyone safe who has been bitten by a mad dog. . . . At one time, when mad dogs were very numerous in the Mátalé district, mad jackals were also to be met with; and two men who had lain down to rest in an open shed were severely bitten by a jackal, which, from their description, was evidently in a rabid state. As these men were travellers, I did not learn their fate; but I have known an instance of a horse dying from the bite of a mad jackal. One day, in that same season, I discovered that three terriers, which I had inherited from the commandant who preceded me, were wandering about the house, all of them suffering from hydrophobia, and one of them so far gone as to be unable to close his mouth. . . . They were destroyed without having done any mischief. A few days after this, a servant standing near the door of a room in which my family were sitting, seeing a strange dog rushing in, snatched up a rice-pounder, which fortunately lay within his reach, and killed the animal at a blow; soon after, a half-armed crowd appeared, and recognised this as the mad dog of which they were in pursuit. It was about the same time that, when riding out one evening, I met a moorman who had been severely lacerated by a mad dog; but the wounds healed up in about three weeks.' This man died about six weeks afterwards.⁴

¹ *Marsden*. History of Sumatra, p. 115.

² *Pridham*. Op. cit.

³ *Eleven Years in Ceylon*, vol. i. p. 363.

⁴ The dread of this malady causes the authorities to resort to a cruel mode of extermination of this devoted creature. Tennent notices this: 'There is no native

Hydrophobia is oftentimes prevalent in North and South China. While I was stationed with the British Army of Occupation at Tientsin, North China, in 1860-61, several cases of the disease occurred in the human species.

We have already seen that Peru was visited by this formidable malady in 1803, and that in North America it was well known, as well as in other parts of that region of the world. Spix and Martius speak of its being observed in Brazil, though rarely.¹ A very recent observer in Mexico, M. Liguistin,² in his notes on that country, gives us the following remarks: 'Rabies, though not very frequent in Mexico, is yet known there. It has been seen from time to time, particularly in the dog and cat species. It is a matter of public notoriety that rabies attacks by preference European dogs just imported into the country. For ourselves especially, since we have been in Mexico, we have had occasion to kill two European dogs which were affected with confirmed rabies, in a period of three months. The first of these animals belonged to Marshal Bazaine, and exhibited all the characteristic symptoms of primitive or spontaneous madness. The other belonged to an officer on the staff, and became hydrophobic in conse-

wild dog in Ceylon, but every village and town is haunted by mongrels of European descent, which are known by the generic name of *Pariahs*. They are a miserable race, acknowledged by no owners, living on the garbage of the streets and sewers, lean, wretched and mangy, and if spoken to unexpectedly shrinking with an almost involuntary cry. Yet in these persecuted outcasts there survives that germ of instinctive affection which binds the dog to the human race, and a gentle word, even a look of compassionate kindness, is sufficient foundation for a lasting attachment. The Singhalese, from their religious aversion to taking away life in any form, permit the increase of these desolate creatures, till in the hot season they become so numerous as to be a nuisance; and the only expedient hitherto devised by the civil government to reduce their numbers is once in each year to offer a reward for their destruction, when the Tamils and Malays pursue them in the streets with clubs (guns being forbidden by the police for fear of accidents), and the unresisting dogs are beaten to death on the side-paths and door-steps, where they had been taught to resort for food. Lord Torrington, during his tenure of office, attempted the more civilized experiment of putting some check on their numbers by imposing a dog-tax, the effect of which would have been to lead to the drowning of puppies; whereas there is reason to believe that dogs are at present *bred* by the horse-keepers to be killed for the sake of the reward.'—
'Ceylon,' vol. i. p. 144.

¹ Travels in Brazil, vol. ii.

² Annales de Méd. Vétér. Militaire, vol. v. December, 1866.

quence of a bite it had received from the first-mentioned dog some days before it was killed.' This writer gives three very interesting cases of rabies in mankind, two of which were cured by the extract of 'huaco,' a native plant.

In the coldest regions this much-dreaded malady would appear to be somewhat unfrequent, if not altogether absent. A recent observer believes it to be uncommon in Sweden: 'Distemper is as common among dogs here as in England, but it takes a rather different form. Madness is, I fancy, rare; but the regulations respecting loose dogs in the town are very stringent during the summer season.'¹ In Greenland and Kamtschatka it is said to be quite unknown. Erman,² describing the Ostyaks of Siberia and their dog-sledges, notices this fact: 'Madness among the dogs would be in this country a most formidable scourge, and would infallibly cause the destruction of whole races of men; but everyone here (Obdorsk) assured us that the disease is wholly unknown to them. Steller has stated the same thing respecting the dogs of Kamtschatka; so that hydrophobia would seem to be one of the European (?) results of living in towns. One essential and unfailing distinction between the dogs of Siberia and those of Europe, lies in the very moderate food of the former; whence it might be inferred that it is excess, and not want, which generates the morbid habit.'

Dr. Kane, in 1854, when frozen up in the Arctic regions (lat. 78° 41'), alludes to a disease appearing among his dogs, which much resembled hydrophobia. The description he gives of the symptoms is very interesting. The absence of light during the long intense darkness and cold of the Arctic winter may have been a cause in exciting the morbid disposition which proved fatal to many of these animals, no fewer than fifty-seven having perished.³ Mr. McDougall also speaks of the dogs belonging to the *Resolute*, in the Arctic regions in 1853, having serious fits, none of which, however, proved fatal.⁴

¹ Ten Years in Sweden. By an Old Bushman, p. 169.

² Travels in Siberia, vol. ii. p. 34.

³ Kane. Arctic Explorations, vol. i. pp. 106, 123, 156, 163, 459.

⁴ McDougall. Voyage of H.M.S. Resolute to the Arctic Regions, pp. 369, 376.

CHAPTER IV.

PERIOD FROM A.D. 1836 TO A.D. 1840.

A.D. 1836. In England the spring months were stormy. In October one of the most splendid of those phenomena known as the auroræ boreales, or northern lights, was visible one evening. Insects were unusually prevalent over the whole of Europe. In England, Dr. Holland says: 'In October, 1836, a vast swarm of minute aphides (whether one of the numerous species was not ascertained) passed over a wide district in Cheshire, Derbyshire, and the southern parts of Lancashire and Yorkshire. The air was so thickly filled with them that the clothes and faces of persons walking out of doors were completely covered. When getting into the eyes they excited considerable inflammation. The height to which the column reached could not be known. From the best observations in one locality, its superficial extent must have been at least twelve miles in one direction by five miles in another; but the detached notices from other places make it certain that the continuous swarm was much more widely spread. No sufficient comparison appears to have been made of local observations to furnish proof as to the rate and direction of movement; but it is worthy of notice that the town of Manchester was infested by these insects for two or three successive days. Wherever generated, or by whatsoever instinct carried on, there is cause to suppose that the swarm was in a transit from one place to another, and possibly brought nearer to the earth by some peculiar state of atmosphere existing at the time.'¹ These creatures appear to have made their appear-

¹ *Holland*. Medical Notes and Reflections, second edition, p. 587.

ance in Germany at the beginning of the year. It is reported from Schandau, near Dresden : 'A very strange phenomenon was observed in the month of January, which month was remarkable for its dense clouds brought by the south-west wind. Millions of small black insects appeared everywhere, lying thickly upon the snow, covering the roads, or swimming upon the brooks. They disappeared with the cold weather and the north winds of February ; there could not be a doubt but that the south-west winds brought them also.'¹ In Wurtemberg the maybug was a perfect pest, and grasshoppers were frequent invaders.

Towards the end of this and the beginning of the next year, the great European influenza raged among mankind. It broke out suddenly after a heavy snowstorm and a sudden thaw. In England and Scotland horses suffered severely from an epi-zoöty, which was also termed influenza. 'Influenza has been very prevalent in this part of the country (Carmarthen) for these last three years, and great numbers of horses have been swept off by it on the borders of Cardiganshire and Pembroke-shire ; that part of the country being much exposed to damp and to fogs, and the farmers rather poor, which latter circumstance has caused many an animal to be lost through want of proper treatment. In 1834 and 1835 it made its appearance only in the spring and fall ; but in the present year scarcely a week has passed in which I have not had several fresh cases. The first symptom which I usually observe is a dead, unhealthy appearance of the coat ; the head hanging under the manger ; the eyes nearly closed, and filled with tears ; the ears and legs cold ; the mouth dry and feverish ; the pulse accelerated to about 55 to 60 in a minute ; the dung voided in small quantities ; loss of appetite ; the membranes of the nose much reddened, and generally accompanied by a discharge of yellow viscid matter ; sore throat, swelled legs, great debility, and sometimes considerable cough.'² 'This epidemic disorder has for several months past been very prevalent in this neighbourhood. The principal features have been inflammation and

¹ *Petrusz. Clarus und Radius. Beiträge*, vol. iv. p. 331.

² *Cutteridge. The Veterinarian*, vol. ix.

tumefaction about the eyes, with considerable effluxion running down the cheeks; the head drooping; the mouth hot and dry; the animal is off his feed—in short, there has been considerable fever; the flanks were tucked up; the pulse quickened more or less; the legs swelled, and in some cases very painful to the touch; a general stiffness of the whole muscular system prevailed, accompanied by extreme weakness, a great disinclination to turn in the stall, or to go through a doorway, unless it was large and the threshold low. If relief was not obtained at the outset, every symptom assumed a more intense character. There was usually increased fever or inflammation of the brain in particular; the nervous influence was more or less suspended; the animal quite staggered in his attempt to move, and now and then fell down.’¹

In Scotland the disease is more lengthily described by Professor Stewart, of Glasgow: ‘For three or four months back the influenza has been very prevalent all over the west of Scotland. In the east, I understand, it has been comparatively scarce. In this quarter we are never entirely quit of it at any time. During the first nine or ten months of 1836 the cases were much more numerous than usual; but in November, December, and January the disease raged to an unexampled extent. It suddenly invaded stables in all parts of the town; and wherever it appeared it generally spread over the whole stud. Some escaped, but not many. It is now on the decline (March, 1837); the last fortnight has afforded few cases. As it has prevailed here and hereabout, the influenza is not a new disease. It is the same influenza that we always have, especially in spring and in autumn. If it was not contagious before, it is so now; but its increased or its new tendency to spread does not entitle us to regard it as a strange disease. There may be a little difference, but the resemblance is general. The disease has been very common in the country, but not so generally contagious. In some stables there has been only one patient; but in the town, all, or nearly all, the horses have been attacked wherever the disease has been introduced. There are *two kinds* of influenza. In both the

¹ *Beeson* (Amersham). *The Veterinarian*, vol. ix.

horse is fevered ; in both there is inflammation of the mucous membranes ; and in both the fever, or some other abnormal state of the system—which I shall call *pre-febrile*—precedes or follows the inflammation. In the one kind the inflammation attacks the eyes, the nostrils, or the throat ; it is confined to the head, and may be termed the *cephalic influenza*. In the other kind there is inflammation in the lining membrane of the bronchi ; this may be called the *thoracic influenza*.

‘The *pre-febrile stage* is very often overlooked or neglected. I have never seen it described. For two, three, or four days, and occasionally for so many as eight, the horse is dull, feeble, sluggish, staggering in his gait ; his coat is dry, and it starts on end after drinking, or upon the least exposure to cold ; he sweats soon ; a little exertion quickens the breathing ; the pulse is very little if at all altered ; the eye and nostrils are not redder (often they are paler) than usual ; the horse eats his corn, but refuses a part or all of his hay ; he is eager for water ; when closely watched in the stable, he may be observed to yawn frequently ; and at intervals he makes a deep inspiration, like a sigh. These are the first symptoms. Their duration is uncertain ; it varies from one to eight days, but in general there is a change on the third or fourth. Fever succeeds, accompanied or soon followed by inflammation. What is going on in this *pre-febrile stage* cannot be told. In vulgar language, the disease is said to be working or brewing ; and I know not that science can give a more expressive name. I have sometimes thought I could detect inflammation lurking about the throat or the bronchi. The throat, at least, is often tender, and the nasal membrane flushed, immediately before the fever is developed. Rigor, as an antecedent of influenza, has not, to my recollection, come under my notice for two or three months.

‘The *febrile symptoms* are well known. The hot mouth, hot surface, quick pulse, scanty secretions from the bowels, kidneys, mouth, skin, lungs, and other organs ; the flushed eye and the scarlet nostril ; the prostration of strength, and the aversion to food, require no description. When these symptoms are present the horse is fevered. They belong to all fevers ; but

in influenza, especially the thoracic influenza, the debility is excessive and characteristic. The horse is weak from the beginning, and debility increases as the disease advances. The fever is seldom, perhaps never, fully developed till inflammation is established ; but in some cases the inflammation is not apparent, possibly it does not exist, till the horse is fevered for one or two days. In some the fever comes on very suddenly, runs high, and soon reaches its acme ; in others, it advances by slow degrees, and is not fully developed till after four, five, or six days. In these cases the febrile commotion is not generally so great as in the others, but convalescence is slower. In a great number of cases the horse is so slightly fevered that he requires no medical treatment. In one stable there were above fourteen horses attacked. Eight or ten of these did a portion or the whole of their usual work, which was slow and not very laborious. They all lost flesh very rapidly, and were, indeed, shamefully emaciated. The fever was gone when a practitioner was called to treat the emaciation. They recovered, however, some of them receiving cordials and continuing their work. Some of the others were bled ; one or two were laid up ; but I believe the result would have been nearly or quite the same although nothing had been done. The disease was in a mild form, and there have been very many cases of the same kind.

Progress of Cephalic Influenza.—The pre-febrile stage is of short duration ; very often it is not observed ; perhaps it does not always occur ; sometimes a shivering fit is the immediate and possibly the only antecedent of the fever. The fever itself is suddenly developed, accompanied, or rapidly followed by inflammation of the eye, the nostril, or the throat—one or all. The conjunctiva becomes intensely red, the eyelid swollen, everted, closed ; tears run down the face, and light is painful. This inflammation of the conjunctiva is never permanently injurious. It usually declines as rapidly as it rises. When the nasal membrane is inflamed, it becomes red or scarlet ; water flows from the nostrils, and scalds the skin. In two or three cases there have been patches of ecchymosis, and, though not lately, abrasions and ulcerations, all, I suppose, arising from intense

inflammation. It frequently proceeds to suppuration, producing a copious discharge, which is generally yellow, but sometimes greenish or bloody, and offensive. So soon as suppuration is established, the fever declines, and the horse recovers his strength and spirits almost immediately. The discharge has sometimes continued for several weeks, but has been permanent in none. . . . When the throat is inflamed, there is cough, or difficulty in swallowing ; one or both, with or without enlargement of the parotids. In two cases the pharynx alone seemed to be inflamed. Deglutition was suspended, but there was no cough. When the larynx is the principal or sole seat of inflammation, the cough is distressing, but free and loud. It often remains for a long time. Several have it now that are at work and quite well. I feel that in some of them it is settled. In several cases the eye, throat, and nostrils have all been intensely inflamed at the same time. But in general one has been much worse than the other two. Of late, the inflammation of cephalic influenza has attacked the nostrils and the throat more, a great deal, than the eye. . . . The cephalic influenza is often combined with the thoracic, or the latter follows the former. Still, each occurs as an individual disease. I have never seen the cephalic produce death. But if the horse go to fast work with the fever on him, a little destroys him. He dies, overworked, from work that would not have destroyed him had he been well.

'Thoracic Influenza.—It is this kind that has prevailed so much of late. . . . The pre-febrile symptoms are well marked. If the horse be at work, they must be seen. In general they are visible from one to four or five days before the fever appears ; that is, before the eye reddens and the pulse quickens. The rider or driver complains that his horse is dull and weak ; upon inquiry it is found that he has not been eating his hay, and perhaps not all his corn. The other symptoms are more or less marked. The duration of this stage is shortened by putting a working horse to rest. At slow work, I have often seen a horse ill for three or four days, without any sign of fever, which was suddenly developed after he was laid up for twenty-four hours.

‘Most frequently the fever steals upon the horse. In the cephalic influenza, the horse is well at night, and eats his corn ; next morning he is ill, and refuses his food. But the fever of thoracic influenza advances in slower measure. Most usually the horse eats a portion of two or three feeds before he abstains entirely ; and it is some days before the pulse reaches its greatest quickness. It may continue to rise for three or four days, till it reach 70 or 80. In the cephalic disease it often rises so high in one night, the heat of the body is always greater, and the debility is not in such excess. The quick pulse, the weakness, and the comparatively low temperature of the skin, are characteristic of thoracic influenza. The skin is always warmer than usual, but it is not so hot as in other diseases, when the pulse is equally quick. As the fever advances, symptom after symptom becomes more clearly established. The redness of the eye and the nostril deepens ; the prostration of strength amounts almost to palsy ; the pulse runs up to 75, 80, and in severe attacks to 90 or 95 ; it is small, and not easily counted, yet the artery is sufficiently perceptible. At the beginning, the breathing is often undisturbed, and in a few cases it never becomes very quick. In many, it becomes excessively hurried in the height of the fever, or immediately before death.

‘In all cases it is more or less quickened from the time the pulse rises ; but in some there will be only 12 respirations per minute, while in others there will be 35 or 40. The breathing is always quickest when the inflammation spreads from the head, or is seated chiefly in the large branches of the windpipe. When it is confined to the minute branches, respiration is comparatively slow. The extremities are usually warm. Sometimes three will be hot, and one cold ; at other times, one or two will be hot, and the remainder cold ; often they are all cold in the morning and hot at night. The horse always drinks a good deal, but he is not seriously ill when he eats either mashes or hay. He may, however, be often tempted to eat articles of which he is very fond, such as carrots, furze, boiled barley, beans, etc. The mouth is hot, dry, clammy, red, and occasionally tinged with yellow. The

eyes also are often yellowish, particularly at the beginning. The evacuations are not altered in colour or consistence ; at least they present no appearance which may not be observed in health. They are often retained, the horse, perhaps, passing a whole day without emptying either bladder or rectum. There is rarely any cough ; when there is, or when coughing is excited by compression of the larynx, the sound is low, stifled, gurgling, interrupted, and sometimes the effort is painful. The horse rarely lies down. For a few minutes he may, at an early period, especially if he does any work after he is ill ; and at a later stage of the disease he sometimes lies down from abdominal pain ; but in nine cases out of ten he stands night and day, from first to last. The blood, when drawn, is always dark-coloured ; it is so even in the pre-febrile stage, though not very decidedly. In fatal cases, the blood is absolutely black, and thick as treacle for some time before the horse dies. The vein fills slowly, and the blood escapes in drops. It is exceedingly cohesive, sticking to the fingers, and uniting with the hair like glue. When the horse is to live, the symptoms, after an uncertain period, remain stationary. He is in much the same state for two, three, or four days. Then he becomes more lively, the eye less red, the pulse softer, the artery not so easily felt, yet broader and softer when it is felt. The heart may continue to be very irritable for several days longer. Before the number of pulsations decrease, there is usually some irregularity in the action of the heart. It beats as quickly as before, but it pauses, omits several strokes every now and then, perhaps at every twentieth stroke. This is a good sign, and in this disease is entirely independent of medicine. The horse gradually returns to his food, moves about, recovers some portion of his strength, but seldom lies down till eight or ten days after he appears to be out of danger. When the horse is to die, his pulse continues to rise till it passes 100 ; the breathing gets quicker ; the horse expresses no pain, yet his countenance indicates extreme dejection. He stands for hours together without moving a limb, heedless of all external objects, and showing no desire for anything, except perhaps for water, when he

casts a languid glance behind him upon hearing a pail in motion. If very heavy, he sometimes lies down, and in this stage he requires assistance to rise. He seldom lies so long as fifteen minutes. As death approaches, the pulse becomes exceedingly small, hard, and quick. It can be counted only from the heart. A few hours before death, the horse usually becomes uneasy; his breathing is very laborious, and perhaps he has pain elsewhere. He is restless, thrusts his muzzle against the keeper, as if he desired to attract attention or implore relief. The eye betrays suffering as plainly as speech could tell it. The horse generally retains his senses till he dies; but sometimes his vision and hearing appear to be affected, and he executes movements indicative of delirium. At the last hour his breathing is laborious in an extreme degree; he trembles, staggers, reels about, sinks on his haunches, rises, prepares to lie down, again recovers his feet, endeavours to stand, falls, gasps, and after a few struggles to rise, he expires.

‘Upon *dissection* the cellular, muscular, glandular, nervous, all the vascular tissues of the body are tender, easily torn, and gorged or stained with thick black blood. This is particularly the case when the horse has died without bleeding. When he has died purging, the discolouration is not so general, but the soft, flabby, tender state of the muscular fibre is still more apparent. The bladder is seldom empty. The stomach and bowels always contain much fluid, as much, to all appearance, as the horse has drunk for several days before. The kidneys are never diseased, neither is the liver. This organ, indeed, is tender, and full of blood; but it is the seat of no more disease than the muscles. The lungs present various lesions. When the inflammation has been confined chiefly to the large bronchi, the lungs are large, much larger than usual; they fill all the chest; their external surface is little altered. Upon opening the bronchi they are found full of white or reddish froth, which often extends along the whole course of the trachea, and into the head, filling all the cavities. When the horse is not examined till twenty-four hours or more after death, this foamy froth escapes by the nostrils, and forms a

pool around the muzzle. It is forced out as the body cools. In addition to this, the bronchi usually contain some bloody purulent matter. The lining membrane is always intensely inflamed ; in some places it is black, in some green, and it is red only where the inflammation has been least. In cases of this kind the horse is never very ill till within a day or two of his death. He dies suddenly, and gasping with his mouth wide open. When the inflammation has been confined to the minute ramifications of the windpipe, the lungs are not larger ; their external surface is very dark ; they look as if they had been inflamed ; some parts are solid, the bronchia obliterated, or full of bloody pus, mingled with a little air. When the lung is solid, some of the bronchial tubes may be traced, and their lining membrane found in union with a dirty reddish or yellow lymph, by which they are filled up. In those places where the inflammation has not proceeded so far, the membrane is distinct, and intensely inflamed or gangrenous, covered with bloody pus.

‘When the horse lingers, which he frequently does, the inflammation being intense, but not extensive, the lungs are tuberculated, studded with tubercles in different stages of their progress to suppuration, and of different sizes. Sometimes no tubercles are to be found ; the lung is black, soft, short, the finger makes a cavity in its substance, and that cavity fills immediately with pus and blood ; the air-tubes are full of lymph, the bloodvessels are full of coagulated blood ; perhaps the pus comes from very minute branches, not seen by the naked eye. The heart contains thick black, semi-fluid blood on both sides, and a little is found in the aorta. The brain I have never examined. The state of the lungs almost forbids further inquiry.

‘Regarding the *seat* of the disease, there cannot, surely, be any dispute. . . . The inflammation of the bronchial membrane sufficiently accounts for the state of the blood. The membrane by which it should be purified is unfit to perform its function ; and the blood passes through the lung little altered. The extreme debility, the torpid state of the muscles, of the bowels, of every part ; the diminution of sensation,

organic and animal ; the absence of pain ; the comparative tranquillity of respiration, and coolness of the skin, are all to be attributed to the state of the blood. Defæcation does not take place, and the muscles cannot contract ; the nerves cannot feel, and the glands cannot secrete. To the symptoms produced by impure blood, add those that would accompany an equal degree of inflammation in any other important organ, and you have all the constituents of thoracic inflammation. The *cause* I do not know. Contagion is a fertile source, and I cannot say that I have been able to trace the disease to any other. Sometimes I have blamed exposure, bad stables, general bad management and other agents ; but I have seen horses again and again under the influence of suspected agents without suffering as I expected they would suffer. Wherever the disease has appeared, it has, with a few exceptions, gone over the whole stud. In many large studs, quite contiguous, but not connected with diseased stables, there has been no influenza. In one containing twelve horses, ten took the disease ; it was double-headed, and the disease went over one side before it invaded the other ; at least, only one on the first side remained well when the others began to be affected. In another stable fourteen out of sixteen horses took it ; and, in the majority of smaller stables, none have escaped. There is often, however, a considerable interval between the first and last. In one stable of about one hundred and twenty horses, one came off a journey with the disease. He was kept out of the yard, and he was the only sufferer. . . . The complications and unusual results of influenza are rather numerous : I can do little more than mention them. The cephalic and the thoracic are often combined from the beginning, and very often the latter follows the former at the distance of several days. When the bronchial inflammation becomes intense, that of the head usually declines. But if the patient dies, the cavities of the head, frontal and nasal, the trachea, and the large branches of it, are all much inflamed and filled with froth. This combination is very common, and easily understood. Pneumonia appears to be present in all the cases that have rapidly run

to a fatal termination. But the inflammation is frequently said to be in the lungs when the discolouration arises chiefly or entirely from inflammation in the minute bronchi. *Founder (laminitis)* has not been so common as it usually is in purely pneumonic attacks. I have had only two cases ; they were, however, of great weight. *Abdominal pain* has occurred very frequently. I have seen no case in which it existed at the beginning. The horse has always entered the febrile stage, and has been in it for a day or two. Sometimes the pain is very acute ; sometimes merely a passing pang, producing no mischief. When severe and lasting, the pain always quickens and hardens the pulse ; and, unless quickly removed, it destroys the horse. . . . Perhaps the large quantity of fluid contained in the bowels may excite distension or spasm at particular places where it accumulates. There is no gaseous distension. *Pleuritis* has occurred in three or four cases ; in two, the patients were neglected. They were far gone before they came under treatment. But they seemed to be doing very well for two or three days, till, all at once, the pulse rose, hardened, and the breathing became pleuritic—the costal cartilages forming a ridge along the flank, the expiration prolonged, the inspiration incomplete, the flank not fairly let down. Both died. The pleura was much diseased ; in one the bronchi were gangrenous ; in the other, which lingered for a good while, the bronchi were nearly or quite sound ; but a portion of the lungs was solid, apparently from obliteration of the air-tubes. Except from relapse or neglect, there has been no case of influenza in combination with pleuritis and hydrothorax. *Diabetes* has occurred in several cases, always at the decline of the disease. . . . *Hepatitis* has not been seen by me : I have heard of it from others, but I do not believe that the engorgement and tenderness of the liver have any connection with inflammation in its substance. *Cellular effusion* has been very rare. In a few cases the legs, sheath, and brisket have swelled, but in a much less degree than usual after a sharp attack of pneumonia or influenza as it prevails in spring and autumn. I do not understand these serous effusions ; but I am disposed to believe that hydro-

thorax, ascites, cellular effusion, and perhaps diabetes, all arise from a particular state of the system, more than of the organ by which the fluid is furnished. This, however, is merely conjecture. *Glanders* and *farcy*, in a very acute form, have been connected with influenza. The fatality of the disease has not been very great, considering the number of cases. In my own practice I have only lost eight. I do not know how many have come under treatment; I have no list, and cannot remember more than between one hundred and fifty and one hundred and sixty. But between neglect and the bad treatment of quackery, the deaths have been sufficiently numerous; so many have died, that, notwithstanding the high price of provender, all kinds of horses are dearer than usual.¹

In London, Veterinary Surgeon Percivall, 1st Life Guards, writes: 'Disease has prevailed to an extraordinary extent among horses during the summer and autumn of the present year. Two distinct epidemics have come under my notice at different times, nowise alike, and seemingly in nowise connected. The first made its appearance in the month of May, and declined and ceased in June. It was characterized by dulness and dejection; by complete and often long-continued aversion to food of all kinds; by sore throat, and in some instances by catarrhal symptoms; by celerity of pulse; by the speedy accession of debility; and by an insidious proneness to run into chronic pneumonia. In fine, altogether, it did not materially differ from many former epidemics.

'But the second, which commenced in July, and still in the metropolis (October) and probably in many country situations continues to prevail, though its prevalence appears much abated, has assumed altogether a different aspect from the ordinary epidemic. It has manifested this one, among other peculiarities, that in no instance has it presented the appearance of catarrh.

'*Symptoms.*—Dulness, and indications of pain in the head; disinclination to take food; partial closure, with slight puffy tumours of one or both eyelids; intolerance of light; a trifling

¹ *J. Stewart.* The Veterinarian, vol. x. p. 119.

issue of tears from the inner canthus ; mouth hot, but moist ; fulness of the skin under the jaw ; legs, most commonly all four, swollen and tender to pressure ; sheath infiltrated ; gait stiff, straddling, and, in some instances so difficult in the hind-quarters as to excite suspicion that the loins were affected ; pulse about 60 ; alvine and urinary excretions, if sensibly altered, diminished, there being a disposition to constipation.

‘ *The Peculiarities* of the present prevailing epidemic consist, first, in its singular uniformity of character : in upwards of one hundred and thirty cases that have occurred immediately under my own observation, it has preserved, with slight variations, identical distinctive signs ; the eyes, the legs, the gait, the sheath, the submaxillary interspace, have, one or other, or all of them, in conjunction with febrile symptoms, too plainly demonstrated the identity of the disorder to admit of a moment’s doubt. And these characteristics, I have since learned, have been as promptly recognisable upon the Surrey hills, farthest from London, as in the very heart of the metropolis itself. The second peculiarity observable has been the absence of catarrhal symptoms ; most influenzæ have been noted for affecting severely the mucous membrane of the air-passages ; in the present instance nothing has occurred of the kind that has attracted notice. Thirdly, the present epidemic has been of a remarkably curable nature—it has, with very few exceptions, speedily yielded to mild and simple treatment ; and although its tendency, after the primary attack, to run into debility has been strong and rapid, still that debility has not of itself proved ultimately hurtful further than the ill-conditioned state to which the animal has been reduced by it. *Its Tendency or Termination* has been, with a little assistance from art, sooner or later, into the return of health and strength. To this, however, there have been some—in comparison to the numbers attacked, very few—fatal exceptions. Out of the one hundred and thirty cases that have occurred in the regiment to which I belong, two have terminated in pneumonia, two in hydrothorax, and one in farcy and glanders : the farcy originated in and spread

from the hind extremities ; glanders ensued. In some rare instances the attack has been so slight and evanescent as to pass off after simply a change of diet, without medicine. In the generality of cases, from a week to a fortnight has sufficed to restore the animals to health. In some instances a lingering low fever, characterized by languor and debility, with or without swollen legs and sheath, and weak eyes, has supervened, which has called for the administration of tonics and diuretics and stimulants, and required from one week to a month to overcome. In one case, after the expiration of a month, an abscess formed in the throat, which proved critical, as from that period the animal went on well.

'Causes.—My regiment did not move from the Regent's Park Barracks until the first week in July, up to which period not a single case had occurred of this latter description of epidemic. The first and second weeks in July were marked by oppressively sultry weather, and in the third the influenza made its appearance, of which I have been attempting a description. Soon after its onset it rapidly spread, not from one horse to another standing by his side, or even always in the same stable or part of the barracks ; but it selected as its subjects the young, the three and four-year-old horses, leaving hardly one of them unaffected, and scarcely ever fastening upon an aged horse. I have kept several old horses in situations where they have been surrounded by others affected with influenza, and they have not caught the disorder : for these reasons I have pronounced the disease *not* contagious. Had I once entertained a different notion, I should have considered it my imperative duty to have used every precaution to prevent its spreading: I took none, and I have not had the slightest reason to repent of it. . . .

'Relapse.—Rare, but marked, instances have presented themselves of relapse : about half a dozen horses experienced a second attack, differing only from the first in being milder. In one or two subjects a third attack seemed demonstrable.

Pathology.—The parts principally affected appear to be, as far as we are enabled by the symptoms to point them out, the brain and nerves, the spinal marrow, and the serous or exhalent

structures. The dispiritedness and indications of headache, together with the augmented sensibility of many parts, are sufficient to warrant us in inferring cerebral and nervous derangement or excitation ; while the infiltration of the legs, the sheath, the submaxillary space, and the eyelids—all parts redundant in cellular structure, and more or less dependent in their position—make it manifest that the exhalent system altogether is in an inordinate state of activity. This seems to be the result of the cerebral excitation ; or, in other words, a fever is set up in the constitution in consequence of some alarm or irritation the cerebral or nervous system has experienced from some external influence, supposed to be atmospheric, which we neither know nor profess to know, anything about. And indeed, of the nature of the fever we understand as little as we do about the cause : we see it first in an inflammatory form ; next, in a state of decline, as though it were about to take its departure altogether, and in some cases actually doing so ; but in others, instead of leaving, changing into a low debilitative character, and in that form hanging about the animal for quite an indefinite length of time, giving rise, on occasions, to fresh grievances, such as local inflammations or swellings, abscesses, diseased lungs, etc. That the fever is specific or uncommon is shown by various peculiar local disorders attending it, by its course and tendency, and by the little power we have over it by medicine. That it is not either infectious or contagious is made evident from the manner in which it affects horses standing congregated in large bodies. That it is neither destructive nor malignant in its influence is proved by its evanescent character, and by the speedy return of health. That its production is connected with atmospheric causes seems most probable from the circumstance of its being found to prevail so extensively and generally at the same season, and, in all localities—in the centre of London and upon the Surrey hills—to present one uniform aspect.’¹

Mr. Cherry, after stating that he observed the malady first in Berkshire, then at Brixton Hill, Surrey, and about two

¹ *Percivall.* The Veterinarian, vol. x. p. 132.

months afterwards in London, asserts that it spread from east to west. In July and August its character became rapidly developed, and in the following January it had attained such dimensions that it excited great alarm. 'The frost, which was rather severe, brought it out with terrific violence, and the whole kingdom was suffering from it.'¹ Mr. Harrison, of Lancaster, says all horses, from the foal to the most aged, participated in the general sickness.² Mr. Gloag, 10th Hussars, in garrison at Nottingham, reports that out of forty horses of that regiment attacked with this influenza, fifteen died.³

On the Continent there are some interesting notices to be found for this year, and among the diseases mentioned we also find this horse influenza. In Pomerania, the milzbrand appears to have been, as usual, the predominant malady. In Brandenburg, the chief characteristic of the prevailing diseases among animals was catarrhal rheumatism, with a constant tendency to nervous derangement, and often with gastric complications. Domestic poultry sickened and died of the same pestilence-like symptoms which have been described for last year. These were mostly noticed among hens during the months of January, April, August, September, and October. The cause of this disease was not reported, and its rapid course gave no opportunity for the trial of remedial measures.

It had been observed that during the latter part of the last century and the commencement of this, there had raged among horses for many consecutive years throughout the whole of Germany, and even in other countries to a greater or less extent, a catarrhal nervous fever, with various complications, to which medical writers had given several designations, such as 'horse-plague' (*pferdseuche*), 'nervous catarrhal fever,' 'chest disease' (*brustseuche*), 'epizoötic lung-and-liver inflammation,' and 'influenza.' 'Since 1821 this disease has broken out again, now here, now there, in a variety of forms, and has caused great loss in studs, in the public and cavalry stables. In the year 1836 it raged in the province of Brandenburg over

¹ *Cherry*. The Veterinarian, vol. xx.

² *Harrison*. Ibid. vol. x. p. 8.

³ *Gloag*. Ibid. p. 12. Many more notices of this epizoöty will be found in Mr. Spooner's (of Southampton) work on the Influenza of Horses. London, 1837.

a tolerably wide district, and especially in the months of January, February, May, and June. In the third quarter of the year it appeared only in isolated cases among horses. In the latter part of the autumn it became more frequent again, and manifested itself as a combination of lung-and-liver inflammation of an asthenical character, but was not very malignant. It was most frequent in stables where large numbers of horses stood ; and from this circumstance, joined to the state of the weather under which it usually occurred, we may learn that one of the principal causes of the disease was the damp, cold, changeable season, and foul air inhaled in the stables. Long rest and good fodder after severe labour seems to have been conducive to the disease, and occasionally even to make it contagious. The symptoms of this malady were : A yellow colour of the conjunctiva and the mucous membrane of the mouth ; sudden and great lassitude—in many cases even stupor ; loss of appetite, especially for corn. There was increasing fever ; and rapid and often soft pulse (from 60 to 100 a minute) ; quick, short breathing, with frequently increased temperature of the breath ; pain on pressure in the region of the chest ; a dry cough ; continuous standing posture ; pale-yellow and small-balled dung ; thin urine. The disease lasted from ten to sixteen days. Its termination was frequently accompanied by the passage of a very bilious-looking, dark-brown coloured excrement ; by thick brown urine, and occasionally by a profuse secretion of mucus in the respiratory organs.

‘ Glanders and farcy occurred at all times of the year, but less through infection than through the unfavourable termination of the catarrh (*druse*), which was so common in its various complications. Among cattle, the milzbrand showed itself first in May, among the herds of Jeserich, near Brandenburg, after the animals had been six days at pasture. Soon afterwards it appeared at Golzau, and then in Lütte (in the Principality of Potsdam). At the latter place it raged at the same time among sheep, and with these, as with the cattle, it assumed in most cases the apoplectic form. Want of water could not have occasioned the disease in these places, and it

appears rather to have been induced through the animals having been driven by sandy paths and through clouds of dust to the pastures, which were low and swampy, and the miasma from which had probably a prejudicial influence on health. In July and August the disease showed itself here and there, but only in isolated cases, among cattle, sheep, and swine. In the month of September, however, it appeared among the horned stock of different neighbourhoods of the province, but chiefly in several villages of the Principality of Potsdam almost simultaneously, causing great devastation, especially in the village herds of Stechow (Westhavelland district). In October several head of cattle in the herds at Neuendorf (Cottbusser district) suddenly fell dead. On the 5th of November, at the same place, two head died. The principal cause of this was supposed to be the pasturing the cattle in ponds drained in the spring, and where during the heat of the summer a miasma was disengaged from the slime and decayed vegetable matter; for all the other cattle remained healthy, although not protected from the weather. On the whole, only eight head died, and the disease was stayed on the removal of the cattle from this pasture, and feeding them upon good hay, potatoes, turnips, and pure spring-water.

‘The lung disease appeared in about fifteen different places, but nowhere attained such proportions as might have been anticipated by the unfavourable state of the weather. *Lecksucht*¹ (a desire to lick), and brittleness of the bones—a

¹ This affection (*Rosio vaccarum*) in which the cow has a tendency to lick and nibble everything, especially saline, calcareous, or earthy substances, is always the sign of a cachexia, which may be compared to the picking (*pica*) of chlorotic children (*Heusinger*). A similar affection has been observed in sheep in countries where they are housed in winter. These animals not only acquire a morbid disposition to lick walls and swallow various solid substances, but to lick themselves or other sheep, and tear off the wool, which they ingest. This unnatural condition is said to be due to feeding sheep too exclusively on sloppy food, and not allowing them the dried vegetation natural to them at this season of the year. Hair and other concretions form in the stomachs; the animals do not thrive, and destroy their fleeces. All this is obviated by allowing them hay. When the habit becomes confirmed, it is often necessary to separate the animals, and dress the wool with nauseous substances. In Germany the disease has also been termed *pica*, as in children.

disease of late rare in this neighbourhood, became so frequent in the neighbourhood of Spremberg, Seufteberg, Calau, and Lackau, from March to the end of September, that it might be considered a true plague (*seuche*). The veterinarian Dietrich ascribed it to the poverty and scarcity of the fodder.

‘Among sheep, anthrax (*blutstaupe*) usually attacks the best-thriving and best-fed ewes in the rich pastures, but especially in the stubble fields, in the summer and autumn. In the year 1836 it appeared under similar circumstances in August, September, and October in several places; but it nowhere attained any considerable spread, because the owners at once applied the remedy which experience had taught them to use, viz. changing them to a poorer pasture. The veterinarian Hahn, in Züllichau, saw the disease break out among a fine flock of four hundred ewes, from the shepherds giving them, for several consecutive nights, musty and damaged rye. The malady showed itself in an apoplectic form, and was of such a dangerous character that a sheep attacked by it rarely lived longer than a quarter of an hour. The animals were usually attacked with trembling and giddiness over the whole body, as they were standing at the rack and eating hay or other forage; then appeared violent convulsions with slimy saliva flowing from the mouth; death under convulsive contortions of the whole body rapidly followed. The variola ovina (*Pocken-seuche*) showed itself in the principality of Potsdam, as in that of Frankfurt, and caused very considerable loss where it broke out during the winter and summer months. A black goat upon a farm at Tzschetznow, near Frankfurt, where the disease had appeared among the wethers, and which herded with the sick animals, was so violently attacked that the pustules covered the whole of its body, and even spread over its mouth, so that it looked as if sown with them. It recovered by careful nursing, and the course of the malady in it was precisely the same as with the sheep.

‘Cases of rabies, and dogs suspected of rabies, were unusually frequent this year from January until the beginning of June, and in the months of November and December in several districts, many people and a considerable number of animals

(horses, cattle, and sheep) were bitten and infected by them. It almost seemed as if the frequent change of weather in the before-mentioned months had some considerable influence in developing the disease.¹

A very deadly epizooty of subacute anthrax was observed among lambs at Pless, in Silesia, from the 20th of May. Mr. Lowack says, regarding the etiology of the outbreak: 'The weather in the month of April was cold and damp; at the beginning of May we had the first warm days. On the 10th of May the temperature was warmer still, and in the afternoon appeared storm and heavy rain clouds, which expended themselves in violent tempests of thunder, lightning, and rain, until the 14th, on which day the weather was clear, and the heat was very remarkable—even oppressive, until after a very severe storm of hail and rain, when the temperature fell and the heavens were clear, but only to the following mid-day. Then masses of clouds gathered and obscured the sun, rendering the eclipse which took place between three and four o'clock p.m. quite invisible. On the 16th, 17th, and 19th of May the air was sultry, with thunder and occasional showers; from the 20th to the end of May the weather was fine.

'These important electrical phenomena have, it is highly probable, brought on the anthrax disease among lambs; that such powerful electric disturbances in the atmosphere affected the healthy condition of living creatures is shown by the fact, that during an oppressive state of the air the irritability of all organs becomes depressed, and a drowsiness of the whole body takes place; so that the animal functions do not continue with their usual energy; the blood in an animal whose death was caused by the anthrax disease is black, and in certain organs greatly accumulated. This dark colour of the blood is caused by an incomplete process of decarbonization, and as the air comes into close contact with the blood through the lungs, such as electric tension of the air must cause similar disturbances in the functions of the lungs, which makes a decreased nervous power conditional upon it. Also the de-

¹ Sanitätsberichte d. Provinz Brandenburg, 1836.

creased force of the air before a storm may contribute to this, inasmuch as the blood in the veins does not flow with the usual energy towards the central organ, and an accumulation of blood in certain organs is more likely to arise.¹

Glanders, which had been during this and the preceding year very prevalent in the Prussian provinces, was also uncommonly frequent in Mecklenburg. 'Glanders appeared usually in a sporadic form, but was not seldom widely spread by infection, especially among cavalry horses, etc. In the same manner the glanders raged almost epizoötically in the years 1835 and 1836 in Mecklenburg.'²

In Dalmatia the rinderpest raged this year in the Spalato Kreise. In the district of Sign it destroyed four hundred head. The disease was introduced from Bosnia. In the other Kreisen no particular diseases were recorded.³

In the Tyrol the epizoötic diseases of this year were milzbrand, and then inflammatory and typhoid lung disease among the horned stock of Unterinnthal and Botzen.⁴

In Lombardy contagious pleuro-pneumonia was very deadly, killing in one instance one hundred and thirty-eight cattle out of two hundred and fifty-six. Carbuncular fever in a district destroyed seventeen out of twenty-four attacked. Epizoötic aphtha affected eight hundred and twenty-two cattle and swine, of which number only eight died.⁵

In Upper Austria the contagious lung disease and Cattle Plague (*löserdürre*) were prevalent, and between them destroyed one hundred and thirty-one head.⁶

In this year Professor Jessen, of Dorpat, relates having observed in a goat symptoms which so clearly resembled those of Cattle Plague, as to lead him to infer that the animal was suffering from this malady.⁷

In Lower Austria, it is reported that the rinderpest was

¹ *Gurlt und Hertwig.* Magazin, vol. vi. p. 17.

² *Versmann.* Über Rotz-und Wurmkrankheit, p. 9.

³ *Österreich. Med. Jahrbuch*, vol. xxvi.

⁴ *Ibid.*

⁵ *Ibid.*

⁶ *Ibid.* vol. xxiv.

⁷ *Jessen.* Notizen über die Lungenseuche und die Rinderpest. *Gurlt und Hertwig.* Magazin, 1836, p. 219.

somewhat prevalent, and the lung disease of cattle showed itself as an annual epizooty.

Prinz reports from Dresden, Saxony, that there was no striking tendency to disease among the domestic animals, and those occurring were due to external influences. The existing maladies were yet sufficiently remarkable to be noticed, from their ordinary features being complicated with others of an unusual character, but chiefly of a bilious kind. At the same time there was a great tendency to nervous disturbance, accompanied by debility, in which a tendency to gangrene was manifest, causing wounds and inflammations to assume an unhealthy aspect. In January appeared catarrhal and rheumatic diseases among horses and dogs, often complicated with mild bilious symptoms. Among lambs, on some sheep-farms, there was a bilious fever which frequently became deadly through softening of the liver and subsequent dropsy; among older sheep which had 'rot,' death was caused by diarrhoea. In February, rheumatic diseases among horses, cattle, swine, and pigs, were frequent; among horses and dogs these were often followed by abscesses on the skin. With dogs, dysentery was sometimes observed; four dogs died of dumb madness. In March, there appeared at the commencement of the month a general attack of sore-throat amongst horses, which terminated in œdema of the hind-legs. Several horses were also attacked with anthrax fever, which commenced with rigidity of the neck, but soon ended in gangrene of the intestinal canal. In many horses there also appeared gangrenous swellings at the inferior parts of the limbs. Among dogs bilious fever with marked symptoms of jaundice prevailed, and five died of rabies. In April anthrax fever was still more prevalent amongst horses, and terminated in gangrene of the intestinal tract or gangrene of the feet—particularly the 'hinder ones. Among dogs the catarrhal fever was often of a nervous kind, and many fowls died of a bilious inflammation of the intestines. In May there frequently appeared among horses spasmodic colic and rheumatic affections, as well as specific ophthalmia in horses and dogs. In June horses were often attacked with inflam-

mation of the lungs; many also died of lymphatic diseases, particularly glanders, after catarrhal affections. In July a gangrenous inflammation of the intestines was frequent amongst horses, with ulceration of the mucous membrane lining the large intestine; gangrene was common in wounds. Among swine quinsy appeared, and in dogs catarrhal fever, accompanied by an aphthous eruption on the skin; young poultry often died of debility. In August rheumatic diseases were prevalent amongst horses and dogs; the former often suffered from gangrenous inflammation of the feet or enteritis, with gangrenous vesicles on the mucous membrane of the mouth. Cats were often attacked during this and the following months with catarrhal fever, which readily assumed a nervous type, or terminated in a mangy eruption on the skin. In the month of September the catarrhal diseases were less complicated than in the earlier months. Among cattle false cow-pox was observed, and at pasture the young cows suffered from articular rheumatism in the fore-limbs. In October the catarrhal fever was frequently accompanied in horses and dogs with inflammation of the salivary glands, particularly the sublingual ones. It was also observed that, owing, it was supposed, to being allowed to eat potato-tops, the cows gave what is known as ropy milk. Amongst foreign cows, in consequence of housing (?), the real anthrax fever appeared, with swellings under the skin. In November bilious catarrhal fevers prevailed amongst horses, with inflammation of the sublingual salivary ducts, and rheumatic colic. In December there appeared amongst swine quinsy, and amongst dogs gangrenous sore mouth, and diarrhoea amongst all animals.¹

At Paris, rabies in the dog had been extremely common throughout the year.²

During the plague in mankind at Marwar, East Indies, Forbes records a strange mortality among animals. Speaking of that place he writes: 'Although the whole of that province had been for long in rather an insecure and disturbed state,

¹ *Prinz. Clarus und Radius.* Beiträge, iv. p. 209.

² *Recueil de Méd. Vétér.* vol. xiv. p. 473.

it did not affect, to any degree, the circumstances of the bulk of the people, and food was cheap and abundant; neither had there been any unusual peculiarity in the seasons. It was said, and I believe with truth, that there had been a great mortality among the cattle, not only throughout Marvar, but in Mullani, and the desert country to the westward, occasioned by a complaint differing from the epizooties usually observed (the name given to this epizooty in Mullani, or the south-western part of Marvar, was "*Munh*," i.e. the mouth, the most prominent and characteristic symptom being a copious discharge of viscid fluid from the mouth and fauces, resembling a *profuse salivary flux*); but these reports were often vague and unsusceptible of sufficient proof to be quite satisfactory. (About Balwir an unusual mortality among poultry was remarked during the years 1836-7.) The most singular phenomena remarked in connection with the breaking out of the disease, and adverted to in Mr. White's report, was the death of all the *rats* in the village of Taiwali, during the latter half of April, and just before its first appearance. He says: "They lay dead in all places and directions, in the streets, houses, and hiding-places of the walls;" and that this death of the animals attended or preceded the disease in every town that was attacked in Marvar, "so that the inhabitants of any house instantly quitted it on seeing a dead rat."

The epidemic which prevailed in Kumaon, in 1834-5, was preceded, according to Mr. Gowan the commissioner, by a great mortality among the *rats* in the villages.¹

The contagious pleuro-pneumonia of cattle made its appearance at Hasselt, in Belgium, in this year. Dr. Willems writes: 'This disease was introduced to us from Flanders, in 1836, by some beasts purchased of the merchant Moras, and first brought to my father's stables, and to those of M. Platel, distiller. From that time to the present (1853), all the distillers have suffered considerably by it, and many small farmers have been entirely ruined. The disease, at first epizootic amongst us, has become enzoötic, and decimates a

¹ *Forbes*. On the Nature and History of the Plague in the North-Western Provinces of India, p. 34.

considerable number of beasts of the bovine race every year.'¹

In Ireland, a disease in pigs 'under the name of cholera, on account of the black colour the animal assumed,' was reported from the county of Cavan and other parts of the island. It was also described under the name of *morbus niger*; and was a form of fever attended with symptoms of inflammation of the bowels. Dr. Callanan of Cork, who investigated the disease, says that 'shortly after the epidemic of cholera, a malignant disease attacked the swine, and swept them off in immense numbers.'

In England, what was designated by Mr. Rawlings of Bristol as 'a novel, interesting, and severe disease in a flock of ewes and lambs' is reported. Many ewes and lambs had died, and no less than seventy of the latter were ill when this veterinary surgeon was called in. 'Their mouths presented a mass of disease, being one complete ulcer. . . . I found a large fungus issuing from all around the lower gum, enveloping the teeth, and protruding over the lip to a very considerable extent. . . . The disease clearly originated in the lower gum, and when it was matured to any extent, the ewes refused to allow the lamb to suck, and it gradually pined away. At this stage of the disease, the lamb communicates it to the ewe's udder. As soon as she is affected, she begins to lose flesh most rapidly; the udder becomes tumefied. In some of the extreme cases the udder suppurated, and parts of it, with one or both teats, sloughed, and the ewe was rendered useless for a stock ewe.' The disease also appeared upon another farm, but being looked upon as contagious, and the diseased separated from the healthy, it did not spread. Every inquiry made on the Cotswold Hills proved that such a malady had never been seen among the sheep before this time.²

An excellent essay on the canine distemper in Bengal appeared in this year, in which the writer says that imported dogs do not exhibit the same symptoms as the semi-savage pariah dog. In that country it appeared to be due to heat

¹ Dr. Willems. Op. cit.

² Rawlings. The Veterinarian, vol. x. p. 205.

and moisture, as well as contagion. Jackals suffering from this disease have been shot. 'My experience enables me to say that foxes also are liable to a number of diseases in this country, for I have met mangy and emaciated ones very often in the jungles of India. I cannot answer for the wolf, but suspect that, with the other members of the canine tribe, he is also liable to distemper. . . . Distemper is a disease which puts on a variety of forms, and is blended with other ailments, such as enteritis, diarrhœa, and mange.¹ . . . I have seen a kind of distemper here which lasts for some months during the rainy and cold season, and disappears in the hot weather ; it is most frequently attended with cough, pulmonary congestion, and lankness. Another type of the disease comes on in the very hottest months, chiefly in imported strong dogs ; it is acute for a few days, and terminates fatally, when the victim dies in great agony.'²

A.D. 1837. This year is chiefly remarkable for the epidemy of influenza, which prevailed in many countries. The malady appeared in London during the first weeks in January. For the four preceding months the weather had been singularly wet, cold, and stormy, large quantities of snow having fallen ; even in the streets of London it lay for weeks. The evaporation of this, when subsequently thawed, rendered the air cold

¹ This mange may be the pustular or vesicular eruption which sometimes accompanies distemper in the dog in this country.

² Indian Journal of Medical and Physical Science, April, 1863. Nearly all animals are affected by some form of febrile catarrh, which, though bearing a close analogy to the catarrhal affection of mankind, has yet, in each species of animal, a strange tendency to assume a particular and specific character. The horse, cow, sheep, dog, goat and cat species have their special form, and each form is liable to assume a peculiar character. Even monkeys do not escape ; and in them swelling and even suppuration of the lymphatic glands has been observed, in this respect resembling the so-called 'strangles' or pyogenic fever of the horse. All catarrhal diseases in the lower animals have a great tendency to become contagious, and sometimes, as it would appear, acquire the property of transmission from one species to another. And they all readily become epizootic, at one time affecting many species, and at another only one. They are nearly always enzootic in low, damp and foggy countries. The verminous catarrhal disease of lambs, calves and pigs, in which the air-passages are implicated (corresponding to a similar affection of the intestines in young children occurring in the same regions), is enzootic in Holland, at Gottingen, and other places of a like physical character. It is also epizootic at times.

and damp for a long time. In November a great storm from the south-west occurred. On Christmas-day there was a simultaneous storm of wind and snow over the west of Europe; snow fell in the streets of Lisbon and Palermo, and also at Canton, China—a circumstance before unknown. It lay so deep in England that intercourse was impeded.

The influenza continued in London for six or seven weeks. It appeared in Scotland earlier than in England, and it showed itself in the northern and eastern parts of the latter country before the southern and western. The inhabitants of Russia, Sweden, and Denmark suffered very much from it; and it was estimated that at least thirty thousand people were labouring under the affection at one time in the month of January at Copenhagen. Paris was visited by the epidemic a month later than London, the disease having previously prevailed in Calais and other intervening places.¹

Coincidentally, and even later in the year, the lower animals were affected with what was also designated 'influenza.' In England and Scotland, horses more particularly suffered from the epizooty. Professor Stewart, writing from Glasgow, says: 'In the month of June we had another kind of influenza here. It was the same that you had in London. The horse was fevered; the eyelids, muzzle, and legs anasarcous; the pulse always small and weak, and seldom beating more than 50, sometimes not exceeding 30. It seemed to be confined to Glasgow and its neighbourhood. Only one death in my practice. Several horses had it twice. In some it was combined with bronchitis.'²

At Galgou, France, cattle suffered from loss of appetite, weakness of the limbs, injected eyes, and debility while the epidemic prevailed. In Medoc, horses were similarly affected.³

In Germany the malady was very general. In Brandenburg it reigned among horses during the first and second quarters of the year;⁴ and in Westphalia it was especially rife among cavalry horses during this and the two succeeding

¹ *Bascome*. Op. cit. p. 169. ² *J. Stewart*. The Veterinarian, vol. x. p. 606.

³ *Journal de Méd. Pratique de Bordeaux*, 1837.

⁴ *Sanitätsbericht d. Provinz Brandenburg*, 1837.

years. Herr Stephan says: 'A disease described by Viborg as "influenza" and "virulent epizootic horse-fever," by Pilger as "epizootic nervous pituitous fever," by others as "acute glanders" (*rots*), "feverish head complaint" (*Kopfkrankheit*), "typhus," "liver-typhus," "horse-typhus" (Hofacker), "pseudo (*falsche*) inflammation of the lungs," and "epizootic gastric-catarrhal fever" (Hayne), has appeared. Like the cholera or "grippe" among mankind, it suddenly, and without apparent cause, attacks the horses of a district in larger or smaller numbers, rages for a time, and then again disappears. Hence it is justly termed an epizootic, and also a dangerous disease; for unless timely and proper medical assistance is at hand, by far the greater number of horses attacked die. In the autumn of 1837, I had an opportunity of observing this disease among the horses of the 2nd squadron of the 11th Hussars at Hanau, when more than thirty were affected. The sixth or seventh horse died, and it was supposed that bleeding was the cause of this unfortunate result in several of the fatal cases. . . . From the 16th of August, 1838, to the middle of March, 1839, the disease raged among the horses of the 1st, 3rd, and 4th squadrons of the same regiment, which were quartered in Münster. Of the three squadrons, consisting of four hundred and twenty-six horses, one hundred and three were attacked with influenza, and of these thirteen died. The horses of the 1st squadron were first attacked, and from the 16th August to the 20th September thirty were affected. Up to this time there had been no case in the other two squadrons, and from the last date to October 10th no others were reported. From this time, however, cases occurred in all the squadrons to the end of the year, in the following proportions: the 1st and 4th always had from three to five sick horses, the 3rd from eight to nine. . . .

'In 1839, up to the middle of March, the 4th squadron had sixteen new cases. In the other squadrons no case occurred during that time. . . . In all the patients there was difficulty in breathing from the very commencement, but fever was not always present in a proportionate degree. . . . At the outset of the disease, the pulse varied very much in character; in a

few cases it was full and strong ; in most cases it was small and hard (*hart*), sometimes thready (*fadenförmig*), and at the same time irregular, both as regards its number and quality ; in another case it would be soft, while in yet another it was sinking and often scarcely to be felt. The last was the least hopeful, as it was indicative of great debility. At the same time the pulsation of the heart was always to be felt, and often it had a double beat, which was occasionally particularly acute. The number of the respirations in a minute varied between eighteen and thirty-six. The muscles of the abdomen and flanks, at the commencement, were but slightly agitated, though respiration out of doors was always marked by an unusual dilatation of the nostrils. Many horses coughed much on the slightest pressure on the larynx or windpipe from the beginning of the attack, and the cough was usually hollow, weak and painful—more rarely harsh and croupy. Others only began to cough when the disease was disappearing. From the sixth to the eighth day, a yellow fluid frequently flowed from the nostrils, which gradually ceased as the animal became convalescent. The appetite generally disappeared at the commencement of the disease, but not in all cases. If there was no diarrhœa, the fæces at the early stage were usually in dark-coloured balls, which in many instances were covered with a slimy mucus that could be easily removed. But if there was diarrhœa, the fæces were of course watery. At first the ears and extremities were frequently cold—the tips of the ears were always so. The mucous membrane of the mouth was only in a few instances at this stage rather dry ; in all others it was very moist and warm, pale in colour, and in many cases palish-yellow. The conjunctiva was always much tumefied and yellowish-red ; in a few instances only was the yellow colour remarkably deep. Generally speaking, a bilious character was not specially noticed. The secretions of those animals which died did not show any serious disturbance of the functions of the liver in any one case. . . . The disease, when it appeared as a simple chest affection, without gastric or nervous complications, usually increased, notwithstanding medical treatment, in

nearly all the cases at its very outset, until the sixth, eighth, or ninth day; and in such a manner that the fever, which perhaps commenced with between 50 to 60 pulsations, reached from 70 to 90 beats or more in the minute. The number of respirations during such fever was usually between 50 and 60 per minute, and the breathing was what might be called pumping (*pumpend*); in every case at this stage, the appetite entirely failed. At the same time there were also œdematous swellings beneath the breast and belly; these were sometimes of enormous size, and the legs were also involved. When the disease reached this stage, and attempts to thoroughly evacuate the urinary organs failed, death quickly ensued; but if, on the contrary, a plentiful discharge of urine could be maintained, convalescence was almost certain. From twelve to sixteen days was the ordinary duration of the malady, though instances occurred of its lasting three weeks, and one even as long as forty days. . . . The disease was always obstinate when complicated with nervous symptoms in the form of paraplegia; when it was complicated with diarrhœa and colic, it rapidly assumed a critical character, though it usually terminated favourably. When it was complicated with quinsy (*bräune*) two of the patients died; the number attacked in this manner was one-twelfth of the whole, and the duration of the malady was from ten to twenty days. . . . The results of the post-mortem examinations of the organs which offered pathological phenomena, were in all cases (except the two complicated with quinsy) very much alike. With one exception, the cavity of the chest was filled with a thick watery fluid, now yellow, now dark-brown, or of a greenish colour, in which large pieces of plastic lymph floated. In all, the pericardium contained more or less serum, and its external surface was also covered with plastic lymph. The lungs were partly degenerated: in most cases only one, in some both were involved; true pus abscesses were not observed, but on cutting into the lung the parenchyma appeared as a dirty grey-green, or brownish-green coagulum. In a few cases only did the liver appear affected, and then to a trifling extent—a small portion appearing somewhat soft, yellow, and

friable. In two cases, traces of inflammation of the bowels were observed . . . Little can be said as to the causes of this disease. Though the forage which the horses of the 11th regiment of Hussars had received since the summer of 1838 was of decidedly bad quality (the oats were, it is true, somewhat dusty, but otherwise good), it appears to me too venturesome to seek the origin of the disease in that circumstance. I must, therefore, as many have already done, take refuge in attributing it to some miasmatic influence.’¹

The same disease appears to have prevailed among the brood mares of the stud at Achelschwang, in Bavaria. Siebert reports its occurrence, and goes on to say : ‘To the observations then made, I add here others relating to the so-called “horse-plague” (*pferdseuche*) which raged among the brood mares in the years 1837 and 1838. This disease first showed itself as a synochous lung and diaphragm inflammation (*synochöse lungen und brustfell entzündung*); but it followed such a peculiar course, that after a couple of days it assumed an asthenic character. In some instances this manifested itself at the very commencement of the disease by a frequent and weak pulse, bounding heart beat, and greatly accelerated respiration; there also flowed a thin yellow mucus from the nostrils; the appetite failed entirely, and the patients could only take fluids. . . . Irritant cataplasms and sharp friction to the chest must be frequently repeated to have any good effect; bleeding, as several trials have proved, is injurious—even at the commencement of the disease. Internally give rad. valerianæ, angelic., sem. fœnic., bacc. juniper., sulphur. ant. aurat., in the form of an electuary; and in some cases which threaten to become typhoid, I even add camphor in moderate doses. Of those attacked only one died, and from it a large quantity of blood had been abstracted. In some cases, however, lameness of the posterior limbs remained, which only gave way eventually to vigorous treatment. The disease did not affect the foetus, for the mares which recovered all brought forth healthy foals at the

¹ *Stephan. Die Epizootische Pferdseuche. Gurlt und Hertwig. Magazin, vol. v. p. 434.*

proper time. . . . In 1839, all the brood mares remained apparently healthy, but out of thirty-two mares, twenty cast their foals; the remaining twelve foaled in due course, but the foals were sickly and died within two days after birth. This would indicate either an unhealthy condition of the mare not apparent externally, or that the disease attacked the fœtus independently. An examination of them showed diseased lungs and an abnormal condition of the liver.¹

A similar malady was observed at Berlin during this and the following year; and as epidemic cholera was prevalent, it was supposed to have some features in common with that malady. The directors of the Berlin Veterinary School report:

‘In the second week of August, the Asiatic cholera having appeared in a very virulent form in mankind, disease of a rheumatic-gastric and gastric-nervous character was prevalent among horses, for up to the 24th, colic and enteritis were of daily occurrence, but from that day to the end of the month there were only two cases. The colic was generally of a rheumatic and spasmodic character, complicated with constipation of the bowels, although in some cases diarrhœa was present. Besides this, throughout the whole month many horses were attacked with “influenza,” acute rheumatism, and inflammation of the feet.’²

Pommer, Canton Veterinary Surgeon of Soleure, Switzerland, reports that in August and September, a typhus fever appeared among the horses.³ The symptoms enumerated are similar to those just described.

The contagious pleuro-pneumonia of cattle caused great havoc in Holland from 1837 to 1839. According to official statements, no fewer than twenty-eight thousand four hundred and eighty-nine were lost. The Government gave compensation to the amount of 30 florins (*golden*) for every animal destroyed to stay the contagion, and in this way 678,089 florins were expended.⁴

¹ *Seibert.* Kreutzer Correspondenzbl. für die Veter. Med. vol. ii. p. 28.

² *Gurlt und Hertwig.* Magazin für Thierarzn. vol. vi. p. 131.

³ *Wirth.* Op. cit. p. 301.

⁴ *Pommer.* Schweiz. Zeitschrift, vol. v. p. 352.

In September of this year the Cattle Plague appeared in the Danubian Principalities, and was most destructive. It is supposed to have first shown itself in Bondjak, Lower Bessarabia, where many thousand draught bullocks had been long detained without pasturage or other sufficient food around the salt lakes that are administered by Government. The autumn had been very damp and the winter exceedingly severe, but this did not influence in the slightest degree the progress of the pestilence.¹

In Turkey it appears to have shown itself in a very deadly form. 'Epizootics have destroyed, in these latter years, much cattle in Turkey ; above all has horned stock suffered in 1837 in Thrace and Roumelia, and in 1838 in Bosnia and Croatia. We have seen villages in the roads of which dead cattle lay by scores. Pigs and sheep have also been decimated, chiefly in Bosnia.'² It may be noted that epidemic plague broke out among the population of Roumelia in July, 1837, and was generally spread in September, when it proved very fatal. At the same time a meteor was seen, and great swarms of insects appeared, particularly in the Pashaliks of Priserend and Pristina. These were chiefly *Locusta verrucivora*, *Cicada orni*, *Tangypus varius*, and *Stomoxys calcitrans*.

In Lower Austria, the Cattle Plague was also decimating the herds. 'The most wide-spread and destructive disease was the rinderpest. It attacked the cattle chiefly in the districts bordering upon Hungary and Moravia, and was introduced from these countries. It raged with but little interruption throughout the year, and attacked altogether four hundred and sixty-six head of stock, of which three hundred and fifty-one died or were slaughtered.'

Strange to relate, the Cattle Plague is mentioned for this year as having been introduced into the kingdom of Naples, where it caused considerable loss. Its almost yearly irruptions into the Austrian and Prussian frontier provinces bordering on Russia have been but little noticed ; because, probably, though these had done much damage, the sanitary police

¹ Quarterly Journal of Agriculture, October, 1845.

² *Boué*. La Turquie d'Europe, vol. i. p. 509.

measures enforced had prevented its extension beyond a certain point. In times of peace there was but little danger of Europe again suffering from its wide-spread and fearful ravages, so long as the Austrian and Prussian authorities had to deal with it. Professor Nanzio, whose description of the symptoms and post-mortem appearances we omit, as containing nothing new, says: 'Without doubt this malady was imported by certain cattle from Dalmatia, which were brought hither by ship and disembarked at Barletta, and were, after being bathed and swam in the sea, gathered together to pasture in the vicinity of Ofanto, where they mixed with those of a man—the Signor Martino. In about five days afterwards the beasts from Dalmatia began to die, and with them many others with which they had consorted; so that in a short time there died about seventy of the Dalmatian cattle and a great number of the others. This accident at first gave rise to great alarm, and, ignorant of the nature of the malady, its origin was ascribed to all kinds of causes—to the change of climate and pasture, to the salt water of the sea which the animals had drunk, and to the fatigue of the journey. Upon this view of the origin of the malady, it was opportunely decided that the Dalmatian beasts should be removed from these pastures and conducted from the borders of the province of Capitanata, to a farm belonging to a nobleman, Signor Mita, near Foggia. But they had scarcely arrived at this place when about ten of them died, and it quickly became manifest that these beasts had infected those of Mita; others began to sicken, and, what is worthy of remark, a certain buffalo was attacked with the malady, which seemed to affect it in a less pernicious manner, and from it the disease was communicated anew to other bovine creatures.

'In this way, from place to place, was the plague carried from Capitanata to the province of Bari, while other Dalmatian cattle took it directly to Bitritto and Terlizzo.

'Presently the epizoöty showed itself in Taranto, and rumour said that it had been transferred to that state by a drove of pigs which were imported from the province of Bari. . . . The Hungarian cattle-plague (*peste bos-Ungarica*) is of an

eminently contagious nature. It only attacks cattle and buffaloes (*animali vaccini e buffalini*), but it is less destructive in the latter. This peculiarity was observed by the celebrated Lancisi ; but the other authorities who have since written on this subject have not mentioned the buffalo, and assert that this plague is peculiar only to the vaccine species. My observation, therefore, confirms that of Lancisi ; and, I am, besides, confident that if the buffalo be the first animal attacked in any large herd of cattle, it will communicate the malady to the vaccine species, as happened in the farms belonging to the Marquis Filiasi and Signor Franciosa, of Foggia. It is certain that no other animals, nor yet the human species, are liable to this pest ; otherwise its continued presence for three months in Puglie, and the consumption of the flesh of the diseased beasts as food, must have given some proof of this. I myself, without knowing it, partook of the flesh, both boiled and roast, when I lived in an inn in that place, without suffering any ill effects.

‘My observations have demonstrated that the bovine plague cannot be engrafted on any other kind of animal ; in fact, the inoculation of a dog with the mucus from the nostrils, or from the mouth of a sick ox, did not cause in it any disease ; and the only effects produced by the inoculation of two sheep consisted in the appearance, two days afterwards, of a slight reddening of the incised parts, due in all probability to the irritation caused by the incisions.

‘Neither could it be said that the Cattle Plague followed the inoculation with its virus in man, because I can aver that the provincial veterinary surgeon of Capitanata, in dissecting three cows which had died of the disease, reported having wounded one of his fingers, and took no precautions in having it bandaged ; nor was he able at the moment to wash his hands in water, but continued to imbrue them in the mucus, the excrement, the corrupted water, and the pus, without afterwards suffering the slightest harm. I myself saw the scar on the thumb of the left hand, and was unable to trace any evil effects. . . . In dissecting the spinal column of the same calf, there was found a great multitude of the larvæ of

the *æstrus bovis*, closely arranged near each other, between the membrane of the medulla spinalis and the internal surface of the vertebral canal. How these larvæ came to be generated in such an obscure situation appears to me open to discussion. This calf had been killed, and was not long dead. On taking off the skin, not an opening or puncture was visible, and there was no internal trace of alteration which could be ascribed to the bites of the gadfly, nor yet were there any deposits of ova. It is well known that the bovine gadflies usually deposit their eggs on the sides of the dorsal region, and that the larvæ are found in the soft parts of the body of these animals; but I know of no author who has found them in the spinal canal.¹

The 'contagious foot-rot' of sheep was imported into the sheepfolds about Potsdam.³

In Wurtemberg (in the circle of the Danube) vulpine rabies was reported. From Kirchheim it is stated: 'For some time there has been a disease among the hill-foxes which has destroyed a great many, their bodies being found lying about. Recently, men and cattle have been bitten by these mad animals, and cats have become affected with madness by them, according to the evidence of many people. Luckily, up to the present time no person wounded by them has shown any symptoms of hydrophobia.'³ From Buchau, in the same region, it is notified that 'there have appeared many mad foxes, which have injured men and cattle.'⁴ Many cases of infection in men and animals, from the bites of rabid foxes, were also recorded as having occurred in 1836-7.⁵

Rabies in dogs was prevalent in Lithuania;⁶ in Brandenburg large numbers were destroyed in consequence of this malady;⁷ and in Lower Austria, Knolz reports that in three districts there were many mad dogs, which attacked people

¹ *Nanzio*. Della Epizoözia Bosungarica delle Puglie. Giornal delle Utili Conoscenze, vol. ii. p. 347.

² Sanitätsbericht d. Provinz Brandenburg, 1837.

³ Correspondenzbl. d. Württemberg. Landw. Vereins, vol. xiv. p. 262.

⁴ Ibid. p. 287.

⁵ *Hering*. Magazin für Thierheilkunde, vol. v.

⁶ *Gurlt und Hertwig*. Magazin, vol. vi. p. 447.

⁷ Sanitätsbericht d. Provinz Brandenburg, 1837.

and animals. Two of the people died, and all domestic animals so bitten perished.

In Lithuania the contagious pleuro-pneumonia of cattle and sheep small-pox were epizoötic. The first-named disease was also rife in Brandenburg, and the latter malady was also rather severe during the last half of the year about Potsdam, Frankfurt, Königsberg, and Soldiner.

Anthrax (milzbrand) was destructive in Brandenburg during the summer months, and in some localities assumed an epizoötic form. In Lower Austria it also occasioned some loss during the hot weather, cattle and sheep being the principal victims. It was reported as destroying cattle in Switzerland in July. It was also epizoötic in many departments of France: 'For a month (September) a very grievous disease for the farmers has exercised its ravages in the departments of Haute-Vienne, Creuse, and Correze; this disease is nothing else than *charbon*. Its mortality is almost general in those localities which are situated principally on the banks of streams and in marshy places. This malady breaks out suddenly, and without any premonitory symptoms. Some animals fall down beneath their load; and this happens more particularly with numbers of horses, especially those belonging to millers, some of whom have not a riding animal left. Other creatures drop under the yoke when labouring; but the greater number perish in the stables, where they are found dead, distended and black, all this occurring from the evening until the next morning. It is well to add that all the dogs which have eaten of these dead animals have died in a very short time, and with the same symptoms of disease; the same has happened to many wolves which were found lying dead not far off. The *charbon* manifests itself by a swelling of the members or the body, sometimes individually, sometimes generally and all at once; the animals straddle on their limbs, and can scarcely move; their legs become rigid; there is general meteorization of the abdomen; the hair stands upright, bristly, and gets smooth again as the swelling extends to the different parts of the body. If we cut these swellings with a razor or a bistoury, there escaped from the incision a

vapour or mephitic gas, which often produced an audible sound like that of a burning slow-match. The eyes became haggard and squinting, vision gradually failed, and when moving the animal stopped short and fell, never more to rise. After death the body continued to swell until after putrefaction set in, which was not long. But no time was to be lost in getting the dead animals underground; for there was the greatest danger in doing anything with them, save burying them deeply.¹

In the arrondissement of Brest, after the damp heat of July, epizootic erysipelalous fever (*febris erysipelatosæ maligna*) attacked pigs, and within a fortnight but few were left in the villages of Lilia, Perros, Tréménarc'h, Kvenny, Lostrourc'h, and Le Rem.² In Switzerland, the same malady (*rothlauf*) prevailed to some extent.³

The peculiar malady known as 'fragility of the bones' in cattle, was still prevalent in Hesse. It was the subject of investigation by Herr Brunck, burgomaster of Fürfelden. It was very destructive, and chiefly attacked cows kept in damp, ill-ventilated stables, and fed on all kinds of bad or artificial food, without sufficient exercise.⁴

Epidemic cholera prevailed at Rome and elsewhere this year; and from the month of March until the end of 1838, both during and subsequent to this serious epidemy, the 'disease of fowls' broke out in a malignant form in Germany among poultry, pheasants, pigeons, and other birds.⁵ In France the same malady, named 'contagious typhus,' occasioned a great mortality among fowls during 1837 and 1838.⁶

In February an unheard-of quantity of wild ducks, the greater part being dead, was thrown by the sea on the coast in the department of the Landes, France. Some individuals collected as many as five hundred, and the total number gathered was estimated to amount to twenty thousand.⁷

¹ *Hurtrel d'Arboval*. Dictionn. Vétérinaire, vol. i. p. 421.

² *Kzean*. Annales de la Soc. Vétérinaire du Finistère, vol. ii. p. 20.

³ *Pommer*. Op. cit. ⁴ *Magazin für die Gesammte Thierheilkunde*, 1838.

⁵ *Gurlt und Hertwig*. Op. cit. vol. vi. p. 131.

⁶ *Recueil de Méd. Vétér.* vol. xvii. p. 308.

⁷ *Correspondenzbl. d. Württemberg, Landw. Vereins*, vol. xiii.

There was a severe drought at the Cape of Good Hope, which was followed by a great mortality among horses, known there by the name of 'horse-sickness.' It will be referred to hereafter.

About this time two diseases of a disastrous nature attacked cultivated plants in Germany. One was the 'potato disease,' which many naturalists, and especially Von Martius, proved to be due to the development of mycoid growths, which were also the medium of contagion. The second disease was very destructive to the vine. It began at Potsdam in 1835, and ravaged the Rhine vineyards until 1840. It was of an exanthematous nature (the *Schwind-Krankheit* of the Germans), and consisted in the development of a mycoid fungus on the leaves of the plant.

A.D. 1838. The winter was long in the north of Europe and the spring-time late; when it did arrive it was very cold. This was particularly the case in Russia; and at St. Petersburg, in Livonia and Courland, the month of May was so cold that all vegetation was checked and snow fell in these northern regions. In southern countries, migratory birds were observed late in the year, and northern birds appeared in southern latitudes. In January and February, wild swans were seen in many parts of Germany, and in large numbers at Havre, France. At Leipsic it is noted: 'This winter very many birds, natives of the far north, arrived here, especially birds of prey, which killed hares and partridges. Sportsmen declare that such an occurrence has never been known here.'¹ In the spring and summer, swarms of caterpillars and insects were very numerous and frequent on the Continent. So numerous were the latter in one locality, that they delayed a diligence for five minutes.²

In the spring, an epizooty of catarrhal fever, or 'influenza,' is reported as affecting flocks of sheep in low-lying localities in England.³

The epizooty among pigs in Ireland, mentioned for 1836,

¹ *Pohls*. Archives, 1838, p. 396.

² *Pleininger*. Correspondenzbl. d. Württemberg. Landw. Vereins, vol. xiii.

³ The Veterinarian, vol. xii. p. 240.

still continued, and was very fatal in Munster.¹ For England, Youatt states: 'We have accounts of an inflammatory epizoöty among pigs, rapid and fatal in its course, and attacking by preference store pigs rather than those put up to fatten.'²

Professor Prinz, of Dresden, in his report of the epizoötic diseases for this year in Saxony, says that their predominant symptoms were of a bilious and nervous character.³

Don Ramon Paez, describing the horses of the Llanos of South America, casually alludes to a severe panzoöty which appeared about this time, caused, it was supposed, by decomposing vegetable matter. 'Their price (horses) is greatly enhanced of late, in consequence of a devastating disease, which has been raging among them for several years past. Horses were so plentiful in the Llanos at one time, that a large export trade in their hides was carried on with foreign countries. A good horse, which then only brought five dollars, now costs from eighty to a hundred, and even more, according to the fancy of the parties interested. Great numbers of the inhabitants were also carried away by the same scourge, which swept over the land like the cholera, not even sparing the fish in the rivers.

'This frightful epidemic, which the Llaneros have appropriately styled *Peste*, or plague, is supposed to have originated in the great primeval forest of San Camilo, at the head waters of the Apure, from decomposition of the vegetable detritus accumulated there during centuries. From thence, travelling eastward along the course of the river, the epidemic continued its ravages among the inhabitants of the towns and villages situated on the right bank, attacking first one place and then another, until the whole province scarcely escaped depopulation. Even when the mortality abated, the country, which until then had possessed a most healthful climate, never recovered its former salubrity; fevers of a more or less dangerous character prevailed from that time, especially towards the end of the rainy season, while the raising of horses has been entirely abandoned in consequence.

¹ The Limerick Standard.

² Youatt. On the Pig.

³ Prinz. Magazin für die Gesammte Thierheilkunde, 1838.

‘The first symptoms of this epidemic appeared among the crocodiles, whose hideous carcasses might then be seen floating down the stream in such prodigious numbers, that both the waters and air of that fine region were tainted with their effluvium. It was observed that they were first seized with a violent fit of coughing, followed by a black vomit, which compelled them to quit their watery home, and finally find a grave among the thickets on the river-banks. The disease next attacked the fish and other inhabitants of the water, with equal violence, until it was feared the streams would be depopulated. The fearful mortality among them can be better estimated from the fact that, for more than a month, the rippling waves of that noble river, the Apure, were constantly washing down masses of putrefaction, its placid surface being by them actually hidden from view for several weeks.

‘The next victims were the pachydermata of the swamps, and it was a pitiable sight to see the sluggish *chigüires* (capyvaras) and the grizzly wild boars dragging their paralyzed hind-quarters after them ; hence the name of “*derren-gadera*,” applied to this disease.

‘Not even monkeys, in their aërial retreats, escaped the contagion, and their melancholy cries resounded day and night through the woods like wailings of the eternally lost.

‘It is a singular fact, that while this scourge did not spare any of the countless droves of horses roaming the savannas of the Apure and adjacent plains, donkeys and horned cattle were seldom, if ever, attacked ; so that, by their aid, the owners of cattle-farms were enabled to prevent the entire dispersion of their herds.’¹

About this time, a curious and inexplicable epizooty among horses was attracting the attention of veterinarians in Germany. It consisted in a very malignant disease of the generative organs, which, from its supposed resemblance to a certain malady in the human species, was designated the ‘venereal’ or ‘syphilitic disease’ of horses. Besides this designation, however, it was also termed the ‘chancrous

¹ *Ramón Paz.* Wild Scenes in South America. London, 1863.

epizoöty,' 'pox,' 'venereal typhus,' 'Hanoverian disease,' 'venereal nervous disease,' 'epizoötic paralysis,' 'epizoötic paraplegia,' 'glanders of the generative organs,' but perhaps most frequently as the 'coition malady' (*maladie du coït*). It was very malignant in its character, slow and insidious in its course, complicated in its nature, attacking only stallions and mares, never geldings, and differing in its most essential features from human syphilis. Before the year 1796 it had not been mentioned, if it was known, and it is only in that year that the veterinarian, Ammon, observed it for the first time in a district to the north of Prussia; it was first described by that author and the veterinarian Dickhauser a few years afterwards.¹ Many writers assert that the disease was known long before in some parts of Russia, but nothing is certain with regard to its previous history until Ammon and Professor Hertwig, of Berlin, definitively settled its appearance in the kingdom of Prussia in the district of Trakehnen, where it existed among the stallions and mares until 1801. It reappeared again in 1807, and from that period has again and again broken out in Germany. In the district of Bromberg it was studied, in 1815, by the veterinarian Waltersdorf; and from 1817 to 1820, Professor Haveman investigated its character in Hanover. In 1817 and 1818 it once more manifested itself in the district of Trakehnen, where one of the largest breeding establishments in the Prussian dominions is maintained. Between this period and 1821, a disease the symptoms of which correspond exactly with those described as peculiar to this affection, prevailed as a true epizoöty in Styria. In 1821, 1826, 1827 and 1828, the 'maladie du coït' caused serious damage in many countries belonging to the Austrian Empire, but chiefly in Bohemia. In 1830 it was observed for the first time in Switzerland, in the Canton of Berne; and from 1830 to 1832, Latour had an opportunity of studying it in France, where, until then, it had not been seen. From 1833 to 1839 the provinces of Leibschütz and Oeltz, in Upper Silesia, as well as Pomerania, suffered severely from the

¹ *Ammon and Dickhauser. Gazette Hyppologique. Tennecker's Zeitung für Pferdezucht, Pferdehandel, etc. 1803.*

epizoöty, and it was again submitted to a careful study by the veterinarian Haxthausen. In 1840 it broke out afresh in Silesia, and was far more destructive than it had hitherto been, its symptoms being more aggravated and its extension very wide; it persisted until the following year. Since 1842 the disease has not been frequent in the Prussian dominions, having only appeared among a few horses in the province of Posen, a circumstance doubtless due to the wise and rigorous sanitary measures enforced by the government of that country in 1840. In Wurtemberg, only some isolated and benignant cases have been seen. In Bohemia, in recent times, the disease has prevailed for many years to a serious extent, and has been carefully reported upon by Maresch. In Southern Russia the disease often prevails with great violence among the horses, and it has even been seen in the imperial breeding establishments of that country; so that good authorities have maintained that Russia was originally the home of the malady. Neither in England, in Italy, nor yet in Belgium has it been observed, but a French army veterinary surgeon, M. Signol, saw the same disease in Algiers in 1847, among the horses of the Rigas Arabs, who had lost about six hundred animals by its ravages. Signol termed the disease 'epizoötic paraplegia,' but it was known to the natives by the name of 'daaurith.' So late as 1855, General Daumas writes that the disease is unfortunately too common in Algeria, and that the Arabs know it well by the designation of 'el dourine.' He says that among certain Arab tribes, chiefly those of the province of Constantine, it has caused great destruction, and that on many occasions it has produced a fearful mortality among the mares in foal. In 1851 and 1852, it occasioned much loss to the horse-breakers in the south of France, in the department of the Hautes-Pyrénées, where it raged in the district of Tarbes and in the valley of Lourdes. It is only developed in reproductive horses, and is propagated by a contagium in the act of copulation; but it is not known for certain whether it is primarily developed in the mare or stallion, or both. Röhl thinks the latter is the most likely, and that an abuse of the generative functions in

the male, and the existence of a vaginal catarrh in the female, may be occasional causes of the malady.¹ The propagation of the affection is usually owing to the stud stallions being diseased when put to the mares, and though the stallions may contaminate the mares, yet it is no less the fact that these may infect a healthy stallion. Diseased mares may transmit the malady to other mares standing near them, if the contact of the genital organs is possible. The vehicle of contagion is the urethral discharge in the stallion, or that of the vagina in the mare. The period of incubation is, according to Maresch, from eight days to two months.

The external symptoms of the disease vary according to particular circumstances, such as sex, its spontaneous origin (?) or as the result of contagion; it is also, of course, influenced by constitutional idiosyncrasy. In general it is characterized by marked and continued depression of the nervous powers; by mucous discharge, especially from the generative organs; by disturbed functions of the cutaneous, lymphatic, and glandular systems; by the consequent formation of ulcers upon, and of knots in and under, the skin; by paralysis of the hinder extremities; and, finally, by fatal emaciation.² In the stallion the first real symptoms consist in tumefactions, or rather local and circumscribed tumours on the skin, showing themselves at first in the region of the croup. They differ from the tumours of farcy in being formed within the texture of the skin itself, and not having a subcutaneous connection. They are small, of a circular form, have their margins well-defined, and are never confluent. With the appearance of these there are other symptoms which only a careful observer could detect as diagnostic of the malady; these are variable appetite, swelling of the sheath, as if of inflammation, but which is simply œdema, often reaching as far forward as the umbilical region. Similar enlargements show themselves sometimes on one or other of the posterior limbs, and there is often lameness of one of these—most frequently the right leg. The horse has lost his gaiety, and does not appear willing to

¹ *Röll.* Manuel de Pathologie, etc., des Animaux Domestiques, vol. i. p. 508.

² Die Venerische Krankheit der Pferde, etc. Breslau.

move ; the hind-quarters become feeble, and the croup begins to waste ; the condition disappears ; the hair is bristly, and the lymphatic glands, principally those of the throat, become slightly engorged. In some cases the cutaneous tumours are preceded for some weeks by a transient eruption on the penis, and much irritation of the urethral orifice. Some observers have stated that these symptoms are constant and characteristic of the malady at its commencement ; while others assert that stallions, to all appearance quite healthy, have communicated the disease to mares, and have themselves become affected as a consequence—showing the distinguishing tumours on the croup. This seems to be well proved, for the most minute inspection of stallions which have infected mares has not always furnished evidence of the disease. But when, with the male, the malady is due to contagion, the local symptoms on the genitals are strongly marked, and precede by a certain time the general or constitutional effects. The tumours on the skin are not constant, but usually after from four to ten days disappear suddenly or gradually, though only to reappear in other places, and sometimes accompanied by an erysipelatous inflammation of one or other parts of the body, and even badly suppurating enlargements ; in which case there will, in all probability, be febrile disturbance. A mucous discharge is not unfrequently observed from the nostrils, and even from the eyes. Micturition is performed with much difficulty, and attended with violent efforts ; pressure on the loins causes the manifestation of augmented and gradually increasing sensibility. Besides the œdema of the sheath and scrotum, there appears to be great relaxation of the genital organs, and the penis cannot be entirely retracted. As a consequence of this, circumscribed engorgements, simulating paraphymosis, form on it, but there is an absence of inflammation, and the organ is flaccid and cold. At rare intervals reddish-coloured patches appear on its surface, but the mucous membrane lining the urethra is always pale, and even bloated-looking ; if any sores are present, they are only accidental, and not a result of the disease. The act of coition is but languidly performed, and the ejaculation of the

semen appears to cause pain. In the mare this disease is much better defined, and more recognisable in its earlier stages. The animal appears to be 'horsing,' and yet the natural desire does not seem to be appeased after the copulative act; she is uneasy, stamps a good deal with her hind feet, and whisks her tail about. After this, within some weeks, more rarely in a few days after copulation, a peculiar depression of spirits, resembling narcotism, is noticed; the vulva appears to be slightly tumefied, and the swelling extends around its margin to the perineum and the udder, but is cold to the touch, and unattended with pain or sensibility—in fact, it only offers a passive œdema of these textures. Sometimes the tumefaction is confined to one side of this region, and then it causes the vulva to look as if deformed, and shows the clitoris to be also swollen and projecting outwards. On a close inspection, the mucous membrane of the vagina is found relaxed, slightly reddened and swollen; but afterwards pale, and with here and there deep-red blotches, like those on the penis of the stallion. The secretion of mucus in time becomes viscid and ropy, and contains a free acid analogous to phosphoric acid; it adheres strongly to the neighbouring parts, and has a tendency to form dry brown, yellow, or reddish crusts. If the mare is in foal, abortion is frequent at this period, if not before. Hertwig asserts that abortion takes place towards the third or the fourth month, but that this event has no influence on the progress of the malady. The few mares which live until their term of gestation expires bring forth small and delicate foals, which die in a very short time after birth, sometimes in a few hours.

At this stage the cutaneous tumours begin to show themselves, and the mucous secretion from the vagina becomes so abundant as to cover the tail and the hind-legs; at length it acquires such a viscid consistency that it fairly glues together the sides of the vagina, and can only be expelled when the animal makes violent efforts, or is subjected to active movements. In some few cases the vaginal membrane is of a yellowish tint, and exhibits spots or streaks of a bright or deep red; and in other cases, small miliary, hard, flattened

tumours are seen, which bleed easily when touched. This is reckoned a bad sign.

At other times the lining membrane of the vulva is raised up into infiltrated, gelatinous folds; and at a later period corded or conical excrescences are observed, or vesicles of variable size containing a yellow fluid. These vesicles, in breaking, cause a slight loss of substance. According to Maresch, the vesicular eruption was not noticed in the last invasion of the malady in Bohemia; but there were frequently found white spots about the size of a grain of millet, disposed in groups, and apparently due to tumefaction of the follicles caused by an exaggerated cellular proliferation. Röhl has seen among mares, in an important stud in Austria, somewhat deep diphtheritic ulcerations, with greatly infiltrated and injected borders, in the vulva and uterus.

The disease, from this period, proceeds in the same manner in the stallion and mare to its terminations. It may last for a greater or less length of time, and the cutaneous tumours may even disappear entirely until an advanced stage; indeed, all the local symptoms may be irregular. Not so, however, the general ones: the debility constantly augments; the muscular power becomes feebler and more marked; the hind-parts are moved with difficulty, and there is evidently a loss of power in them, as they sway about, showing the nervous system to be involved. Partial paralysis now usually manifests itself: in some it is only a single muscle, in others it is an organ or a limb, which loses its nervous energy; more frequently it is the posterior limbs, and of these the right one appears to be oftenest attacked. Paraplegia and epileptic seizures are common complications. Shiverings, never of the whole body, but occupying individual layers of muscles only, and in single muscles, resembling the catchings induced by galvanism, may be observed. Paralysis may affect the tongue, an ear, one of the lips, an eyelid, and sometimes even the muscles of the mouth and jaws; in which case the animal stands with its mouth hanging open, and is unable to eat. In fact, the paralytic affection varies as much in the form which it assumes as in the degree, the situation, and the symptoms

accompanying it; but the organs or textures so affected always preserve their sensibility and heat.

The functions of digestion are not so much altered as to prevent the appetite from displaying itself, though irregularly, until the last stage, when it disappears. The hinder extremities are always exempt from the cutaneous tumours, and these commonly permit the exudation of a sero-albuminous fluid, which glues the hairs together and then ceases, only to return again. In proportion to the duration and number of the tubercles in the skin and the ulcers on the surface, is the liability of the large glands to take part in the disease. Swelling of these takes place, and in very many instances a chronic glandular affection is the consequence, which not unfrequently terminates in glanders. When the formation of the tubercles has prevailed throughout the course of the disease, and the morbid secretion has been checked, it ends in farcy, rapidly followed by a fatal result. The conjunctival membrane participates in the morbid state, secreting an unhealthy matter; the eyes sink deep in their cavities, and the cornea becomes diseased, and often ulcerated.

This condition often lasts for weeks, or even months, until at last the appetite disappears, the animal falls down and cannot get up without assistance; and often it sits on its hind-quarters, like a dog. Death soon takes place, or the animals are destroyed. This is the most frequent result, for cures are but seldom effected, and then they are long and tedious, and liable to frequent relapses. It but too often happens that recovery, though due more to nature than to art, is incomplete; and paralysis of some part of the body is almost certain to persist, and glanders and other fatal disorders are apt to occur months after the supposed recovery.

A variety of this affection, which Strauss¹ has named 'the pruriginous disease of reproductors,' attacks stallions, especially those which are well bred and in lax condition. It consists in a manifestation of pruritis in different parts of the body, due to irritation of the sensory nerves of the posterior extremities. This is so violent that the animal continually

¹ *Strauss. Mittheilungen Oesterreichlicher Veterinaire.*

rubbs itself until the skin, thickened and swollen, is covered with sanguinolent, unhealthy ulcerations, which, becoming gangrenous and increasing in number, at last induce such extreme agony that, though the appetite continues, the patient dies in a state of extreme marasmus.

The duration of the malady is from four to eight or nine months, and even to twelve or fifteen months; and, what is very remarkable, throughout its whole course the pulse is not quickened, but continues sluggish, and almost without change, to the end.

The causes of the malady, beyond its contagiousness, are hidden in obscurity. It is frequently and apparently of spontaneous origin, both in the horse and mare, and at the same time appears to be communicable from one to the other.

This communication, however, seems to take place rather as a consequence of the local excitement depending on the generative act, under a peculiar epizootic constitution, predisposing to the development of glandular disease, than as the result of the absorption of a specific poison. Its most striking features are the peculiarities attending its spread: in many countries it is unknown, in others but partially so, while in others again, such as Hanover, Silesia, and Hungary, its ravages are rather severe, and need the most stringent legislative measures to keep it in check. In some of its outbreaks it has occasionally, if not nearly always, confined itself to a certain district, sometimes to only a few localities, and even to some particular stables. In the countries where the stud stallions are regularly worked on farms, the malady has never been observed to break out spontaneously; but in those localities where it appears to reign as an enzoöty, the horses are kept exclusively for breeding purposes, have much Eastern blood in them, and are of a nervous temperament; and it is, besides, in these places that horses intended solely for the saddle are bred. The stallions, instead of travelling from village to village, have the mares brought to them, and it has been imagined that the fatigue and exposure the latter are subjected to has much influence in its production. Of the contagious character of the malady, the

experiments conducted at the Toulouse Veterinary College in 1854, by Professors Prince and Lafosse, conclusively testify. But the virus would appear to differ from all other contagia, in that, when applied in an artificial manner to the mucous membrane of a healthy mare's vagina, it remains inactive ; so that the transmission of the malady can only take place in the act of coition. Animals of the same species, living and cohabiting with the diseased, and brought into communication with them in every way, except this of copulation, do not become affected. Foals and geldings are exempt, and men who had excoriations on their hands while dressing diseased animals have not suffered any inconvenience. Mares are more exposed to the affection than stallions, though its progress is much less favourable to the latter ; the best-bred stallions are more susceptible than the under-bred, which have been known to copulate with diseased mares, and not receive the infection, and yet transmit it on the same day to other mares which were previously healthy.

It has been supposed, and with much reason, that the disease was conveyed from the Government 'haras' at Tarbes, in France, to Algeria.

The appearances presented on examination after death are great emaciation and anæmia throughout the body ; in the mare the lining membrane of the sexual organs, and sometimes that of the uterus, shows that it has been affected with a chronic catarrhal inflammation, and has, besides, diphtheritic ulcerations, erosions, or condylomæ. In stallions, the conjunctival tissue of the sheath and scrotum is frequently infiltrated with serum, or has undergone sclerous degeneration. The mucous membrane of the nostrils is often the seat of a catarrh, and the nasal cavities and sinuses are filled with a viscid flocculent mucus. The lymphatic glands in the intermaxillary space are hypertrophied, or filled with purulent deposits ; those in the inguinal region are either indurated or extremely softened. Abscesses, which may be metastatic, are sometimes found in the testicle, the spermatic cord, or the lungs ; these latter are generally gorged with blood ; the heart and large vessels are flabby ; the blood is unctuous

and adhesive ; when extracted from a vein during life it gives a white and abundant clot, without consistence and full of serum. The neurilemma of the principal nervous trunks of the paralyzed limb is thickened and infiltrated, and the cellular tissue in their vicinity, as well as that of the intermuscular tissue, is filled with a considerable quantity of a yellow gelatinous fluid. In many cases, the spinal cord and brain are infiltrated ; the arachnoid membrane has lost its transparency, and its space often contains a large quantity of fluid. The brain is constantly softened, and the ventricles filled with serum ; the spinal cord is softened to a still greater degree, and the serous effusion is yet more noticeable, especially towards the lumbar region.

The prognosis of the malady is uncertain ; some cases which have so far advanced as to exhibit paralytic symptoms have recovered ; while others not nearly so serious looking have yet slowly reached a fatal termination, notwithstanding all attempts at a cure. Castration, in the stallion, has sometimes arrested its progress when paralysis has been present.¹

A.D. 1839. In the government of Minsk, Lithuania, ovine small-pox was very prevalent, and, among cattle, rheumatism, hæmaturia, and epizoötic abortion.² In the department of Doubs, France, the last-named accident appears to have been very prevalent. 'Abortions and cases of difficult parturition have been so numerous this year, that in a single village, where from fifty to sixty pregnant mares were collected, there have only been four living foals. . . . M. Trelut ascribes the great number of abortions observed to the excessive drought, which has so affected the natural and artificial prairies ; to the fatigue which these animals sustained in the preceding autumn in consequence of the hardness of the arable land, and also to the bad quality of their food, etc.'³

In Poland, Holland, and many parts of Germany, anthrax was frequent.

¹ *E. Fischer.* Nouveau Dictionn. etc, Vétérinaires. Art. 'Coit (Maladie du).' Recueil de Méd. Vétér. 1834, 1852, 1853, 1855. *Rodloff, Rychner.* Specielle Pathologie und Therapie, etc., Thierarzt. Röhl. Manuel de Pathologie, etc. vol. ii.

² *Adamowicz.* Magazin für Thierheilkunde, vol. vi.

³ Recueil de Méd. Vétér. vol. xviii.

From this year until 1841, a very universal epizootic fever, or 'influenza,' appeared among horses over the greater part of Europe. For this year it has been described in the north-west of Germany by Gobel and Hilmer.¹ The epizooty was observed to be more malignant than it had been for many years past, and it was particularly virulent in large stables where great numbers of horses were closely crowded. It had been prevalent from the last quarter of the year.

Hilmer distinguished five distinct forms of the malady: a catarrhal affection; a catarrhal disease, with complications of the lungs, liver, or well-marked myelitis; a synochal type; an asthenic, or torpid form; a nervous and putrid condition. The causes were unknown, and bleeding did much harm. The disease did not make its appearance in Wurtemberg for some time after it had been in North Germany. During this epizooty, a curious outbreak of pericarditis, attacking forty-seven horses, was observed by Wörz at Stuttgart.²

Professor Hertwig, of Berlin, says: 'The prevailing characters of the diseases in 1839 were alike in every month. The animals (especially horses) were first attacked with a catarrhal or rheumatic complaint, which, in process of time, took on a gastro-enteritic character, or else became complicated with gastro-enteritis. The characters of pure inflammation were rarely seen, or, if they were, they usually existed but a very short time, and assumed a typhoid character. The contagious diseases were the influenza and grease (*mauke*) in horses; contagious pleuro-pneumonia, dysentery, and at intervals foot-and-mouth disease (aphthous fever), in cattle; variola, inflammation, and worms in the intestinal canal, putrid fever, contagious foot-rot, in sheep and lambs; anthrax in pigs; distemper in dogs, but not a single case of rabies. A very fatal, and for the most part unknown, disease showed itself among birds in March and April. The most prevalent of all these diseases were the influenza among horses, and the variola among sheep. The latter had appeared occasionally during the first and second quarter of the year; but towards

¹ *Dietrichs. Nebel und Vix. Zeitschrift*, vol. viii.

² *Hering. Repert. d. Thierheilkunde*, vol. i. p. 21.

the end of the third quarter, and during the whole of the fourth, it spread rapidly in every direction, and was particularly prevalent towards the north-east and south-west, where it not unfrequently assumed a very serious and fatal character. The influenza appeared during the whole year, and especially from the beginning of September to the end of December. It usually assumed the appearance of inflammation of the lungs or liver, or, now and again, that of inflammation of the diaphragm, and was almost always combined with symptoms of gastro-enteritis. The weakness induced by this disease was so great, that in a few hours after the attack, the animal could not walk without staggering. This rendered it evident that the plentiful letting of blood, which in so many cases is so beneficial, must not be practised here.¹

Rabies in poultry was observed at Königsberg: 'On the 28th of November, 1839, many fowls were bitten by a mad dog. About six weeks afterwards some of these animals became very animated, crowed much, jumped about in a strange fashion, and attacked one another. One of them tore a piece out of a woman's dress and tried to swallow it; after some twenty or thirty hours they could no longer stand on their feet, but fluttered as they lay on the ground. Eight died and as many were killed. They all had paralysis of the posterior extremities, the only constant symptom of animals labouring under rabies.'²

At Gustrow, in Mecklenburg, Gillmeister observed in the springtime an epizooty among cows, which was styled *carditis* and *typhus enteritis*; but which Heusinger thinks was an anthrax fever. On the 19th of June fifteen animals were attacked while at pasture, and when the temperature was 26° Reaumur; several of these died on the spot, and all the others except one two days afterwards. The post-mortem appearances were more like those of anthrax than any other malady.³

Mention is made this year of the ravages of the singular

¹ Hertwig. Magazin für die Gesamnte Thierheilkunde, 1840.

² Sanitätsbericht d. Reg. zu Königsberg, 1840.

³ Magazin für Thierheilkunde, vol. vii. p. 64.

malady among sheep, the 'trembling disease' ('maladie tremblotante' of the French, the 'gnuber,' 'traber,' 'wetzkrankheit' or 'schruckigsein' of the Germans), in Scotland, where it was designated the 'loup^{ing} ill.' It had been very prevalent for some seasons, and Hogg, the 'Ettrick Shepherd,' gives a somewhat interesting description of it—the first, I believe, in this country—as the 'thwarter-ill,' 'trembling' or 'leaping ill.' 'Twenty years ago its ravages were so considerable, that farmers believed the disease to be infectious, and that a stock that was infected by it was fully as unsafe as a rotten one. It still exists on some straggling, dry farms where the ground is visibly overstocked, and in dry frosty seasons when the spring is hard and severe. In such places, if March and April are barren, no succulent nor almost even any green thing is to be attained by the poor creatures for a long space of time. It is easy, then, to conceive the emaciated state into which this must throw them. If at this time they happen to get an overstretch in running or leaping, or even a hasty start or crush in the fold, numbers fall a prey to this disorder. Some will fall down and die in two or three minutes; others will lose the power of one side, and lie sprawling until they die of hunger; others, again, will lie shivering, and very sick at times, until death comes to their relief; while a few will go a long time quite lame, sometimes carrying one limb, and sometimes another, until they are likewise quite exhausted. In the first case, when they fall down and threaten instantly to expire, which is certainly an apoplectic shock, I have seen bleeding, by cutting a piece from the tail, or opening a vein inside the thigh, give immediate relief. In all the other cases, the best method is to take them home, and feed them with strengthening food, until they gradually recover. . . . This distemper is peculiar to dry soils, and prevails in dry barren springs, when the wind settles in the east. If the sheep are in good condition, they are not nearly so apt to take it; but if they are either low of body, or the wind has a tendency to centre easterly, the greatest care must be taken to use the flocks gently, and it is highly commendable to decline underlocking them altogether (cutting

off the wool round the udder in ewes that are near the time of yeaning), as the fatigue which they thereby undergo, and the cold which penetrates to the most tender parts, are often attended by the most fatal consequences.'

Since this period the disease has become well-known throughout Scotland, and exhibits the same peculiarities as on the Continent.¹

Mr. W. Thompson speaks of a great destruction among rooks in Ireland. 'Among adult birds, there was an extraordinary fatality in the county of Westmeath on the night of the great hurricane of January 7th, 1839. . . . The amazing number of thirty-three thousand were picked up dead on the shores of a lake some miles in length, and with extensive rookeries on its borders.'²

An epizootic disease appears to have shown itself among the 'gaours,' or wild bisons of the Himalayas. Sir W. Elliot, speaking of the domestication of these creatures, says they never lived for a longer period than three years in a tame state. Some, he mentions, died suddenly from a disease marked by a refusal of food, running from the nose, and an abominable stench from the mouth. 'A similar disease, it may be noted, prevailed, as I was informed, among the gaour of the Sherwaroya, Shandamungalam, and Nilgiri hills.'³

The year 1839 is an important one in our history, as in it the malady generally known as the 'foot-and-mouth disease,' and sometimes designated 'ekzema epizootica,' 'vesicular murrain,' the 'aphthongular disease,' 'aphthous fever,' etc., was observed for the first time—so far as my researches testify—in Great Britain. This epizooty, which in reality commenced during the previous year, was one of the most

¹ Good descriptions of the malady are given by *J. Fair*. *The Veterinarian*, vol. xii. p. 162. *W. Matthewson*. *The Edinburgh Veterinary Review*, May, 1862.

² *Thompson*. *Natural History of Ireland*, vol. i. p. 319. A similar occurrence was noted by Sir J. E. Tennent in Ceylon: 'A few years ago, during a violent storm of thunder, such was the destruction of the crows that the beach for some distance was covered with a black line of their remains, and the grove on which they had been resting was to a great extent destroyed by the same flash.'—'Ceylon,' vol. i. p. 172.

³ *Elliot*. *Madras Journal of Literature and Science*, 1839.

extensive—appearing in regions hitherto unvisited—as it has certainly been one of the best traced of any recorded in this century. Like many other epizooties described in these annals, the outbreak first made its appearance in the east—towards Russia—and travelled to the extreme west of Europe; but not through the influence of a *something* in the air, so mysterious to the unobservant and ignorant; not by an atmospherical ‘miasma’ to puzzle the learned; but palpably through the medium of a contagium transmitted from diseased to healthy animals, the introduction and spread of which could, in the great majority of cases, be readily traced. This contagium comported itself in this irruption as in other outbreaks of transmissible diseases; when it first appeared in a locality it affected the majority of the animals therein, and soon ceased its ravages; but it more frequently only subsided for a time, breaking out again and again during the same or successive years, when circumstances favoured its recrudescence. If the malady generally followed a direction from east to west in its course over a certain portion of this hemisphere, it did not do so in passing from one province, town, or village to another; but continually followed the routes of commerce, and was carried to and from markets, fairs, etc., in a very irregular manner. The extension of the epizooty towards the west is a fact well established by the records published at the time; but it is also suspected that from its birthplace it may have extended in Russia in a northerly direction—that which it took in Eastern Prussia—to the south, and probably even farther eastward. We will, however, only follow it in its advance to and course through Britain.

RUSSIA.—Beginning with Russia, we have for 1838 already given a description of the weather, etc., in the early part of that year. Accounts from that country show that the epizooty prevailed at the commencement of the spring, and during the summer months in the southern plains, towards Lithuania and Poland. Adamowicz of Wilna gives the following relation: ‘In 1838 there raged throughout the spring and summer, and in a lesser degree throughout the winter also, the “mouth-and-foot disease” in Lithuania, Volhynia, and

Little Russia : the mouth disease principally among the cattle, and the foot disease amongst nearly all the domestic animals. At the same time I frequently remarked aphthæ (*aphthen*) in the human species. Although there were cases of splenic apoplexy (*milsbrand*) among the cattle at that time, no cancer of the tongue (*zungenkrebs*—glossanthrax) was observed. I have never yet seen it.’¹

POMERANIA.—For Pomerania, M. Erdt has communicated a very detailed and circumstantial history of the epizoöty, from which we will make the following extracts: ‘In Pomerania, and principally along the coast of the Baltic, until the year 1838 the foot-and-mouth disease (*maul und klauenseuche*) had been almost unknown; the oldest inhabitant could not remember the visitation of any like disorder. Hence the plague (*seuche*) created a greater sensation, and awakened the attention of everyone here more than it did elsewhere. . . . In general this disease recurs frequently; it seems usually a consequence of a long, dry, hot summer. It generally confines itself to single provinces, even to districts, and sometimes even to isolated places. So far as I am aware, during the long hot summer of 1834, it spread itself throughout the greater portion of the governmental department of Bromberg, without attacking in a similar degree the other departments of the country; in the district of Cöslin it appeared upon one estate only, and spread no farther.’² . . . After the summer and autumn of 1837, when the long winter that followed, and which lasted up to the month of May, 1838, had made our domestic animals susceptible to the “mouth-and-foot” disease, the trade in pigs began with unusual activity in April and May. In all neighbourhoods and on all roads, one met droves of pigs. They were partly bought-up in this department in the vicinity of Lauenburg and Brütow, and left the locality at the beginning and middle of May. Somewhat later, pigs arrived which had been purchased in the bordering districts of West Prussia, and which were driven through.’³

¹ *Adamowicz*. *Magazin für Thierheilkunde*, vol. vi. p. 477.

² This is an error, for, according to Heusinger, the malady spread from Podolia into France in 1834.

³ *Erdt*. *Über die Klauenseuche im Jahr 1838*. *Magazin für Thierheilkunde*, vol. ix. p. 420.

This veterinarian was decidedly of opinion, as were others, that the disease was carried about by the droves of infected animals and their drivers. His remarks are very valuable, and the resemblances or analogies he noted between many of the symptoms and those of Cattle Plague are striking. Men and children suffered from a similar disease by using milk from diseased cattle. The account is too long for transcription.

BRANDENBURG.—In the Mark of Brandenburg the malady probably arrived later than in Pomerania. It was observed at Berlin in June,¹ and excited much attention for some time. The talented veterinary professor, Hertwig, of Berlin, reports the results of attempts at inoculation for this apthous disease in cattle and sheep, and his remarks are worthy of notice: ‘Herr Schwep, veterinary surgeon in the district of Tennstadt, in his quarterly report for 1841, communicates some experiments on the inoculation of sheep for this disease, which I here copy, because they have been made on a larger number of animals than any others of the kind which have yet come to my knowledge. Herr Schwep says: “From the prevalence of this disease in 1838, I, with many others, was led to believe that it arose not only from miasmatic influence, but likewise from infection. In order to ascertain whether I was right in my suspicion, and also whether it was possible to transfer it to some other part of the body, where it might be less injurious to the animal, I made the following experiments. The first was on a flock of nine hundred sheep, one hundred and sixty of which were already lame. I had those selected in which the horn had not quite come off from the foot, but where it was so loose that a slight pressure of the finger would be enough to separate it. With the matter found in the hoof I inoculated five hundred animals on that side of the ear which is most free from wool. In the course of twenty-four hours considerable fever had arisen; in forty-eight hours the inoculated places exhibited symptoms of intense inflammation, and in seventy-two hours I found in many of them small blisters full of serum. On the sixth day I examined them all

¹ *Magazin für d. Gesammte Thierheilkunde*, vol. vi. p. 140.

separately, and found that nearly every vesicle had burst, and that purulent matter, of an unpleasant smell, was escaping from them. During the first ten days after the inoculation, sixty of them became lame, although in each the vesicle, or pock, had risen on the spot inoculated. That lameness, however, was not very great, and in general lasted only about two days. All the other inoculated animals remained free from the disease, though in some not inoculated it raged as much as before. I can only explain the circumstance of sixty becoming lame after the inoculation, on the supposition that they must previously have been infected. Other experiments have been attended with similar results. I have not yet had sufficient opportunity of experimenting on cattle to be able to give any decisive opinion, but I should say that inoculation would protect them also."

'The contagiousness of this hoof-disease (*klauienseuche*) in our domesticated animals, as well as its origin from epizootic miasmata, has been maintained and denied. Carefully instituted experiments, in places and times where the disease is most prevalent, can alone decide this point. In all the experiments hitherto made respecting inoculation, these conditions have not been attended to with sufficient exactness to render the result such as may be confidently relied on. For my own part, I have been led to the conviction that this disease is propagated by inoculation, by the vapour arising from the skin, by the breath, or by the use of the milk, and may thus be communicated to other animals, and even to men. Whether, however, any amelioration of the disease could be produced by inoculation, as is the case in sheep small-pox, is a question which further experiments alone can solve. That inoculation could produce exemption from taking the disease again in its worst form is, in my opinion, problematical. Inoculation experiments, partly undertaken with this view, and partly for the purpose of inquiring into the contagiousness of the disease, have already been made by many persons, and, among others, by Buniva.¹

¹ Calendario della Soc. Agraria, 1812. Annales de l'Agriculture Française, vol. xlix. p. 360.

‘Oxen and calves were inoculated with this disease, and the following was the result : In some, simple fever arose without any other disease ; while in many, an eruption appeared about the mouth and feet. The former were ill only six days, while the latter suffered for twenty days, and more sometimes. In both the disease could be again induced by inoculation.

‘In 1815, Herr Brauell, court veterinary surgeon at Weimar, produced this disease in cattle and sheep by inoculation on the ear. In 1816, Professor Renner inoculated for this disease in Jena and its neighbourhood.¹ Subsequently, Wirth inoculated at Zurich,² as did my colleague, Dr. Spinola, of Berlin, and both with similar results. Rödiger, in his work,³ devotes a whole chapter to inoculation ; and Dr. Bartels, of Helmstadt, has given some very luminous descriptions of inoculations.⁴ According to him, it protects the animal not only from a return of the disease, but also serves as a precautionary measure in cases of infection.

‘A general and normal eruption is thus produced ; and the equal and quick course of the disease when resulting from inoculation, renders it easy and not expensive to bestow that care and attention on every animal which is necessary and beneficial. The farmer is thus enabled to avoid those diseases of the hoof, often so fatal, and the animals do not lose so much in flesh, milk, and growth. Draught cattle are also much sooner fit for work.

‘Dr. Bartels made use of matter for inoculation taken from animals in which the pustules had become fully and generally developed. He also took it from the mouth about the third or fourth day after the commencement of discharge. He likewise endeavoured, as much as possible, to inoculate animals with the matter taken from one of a similar species, and even breed, and not from any others, if he could avoid it. He inoculated in the following ways : A cow or sheep was fed, and if it had done eating, its mouth was cleaned with

¹ *Dr. F. G. Hoffman.* Diss. Inaug. de Incitione. Febr. Bullos Epizoöticae. Jena, 1816.

² *Archiv für Thierheilkunde, Neu Folge, vol. i.*

³ *Erfahrung über die bösertige Klauenseuche.* Chemnitz, 1822.

⁴ *Oekonom. Neuigkeiten, 1842.*

a woollen cloth, and some of the saliva taken by the finger from the mouth of a diseased animal was well rubbed into the lips and tongue. The inoculated beast had not anything to eat for at least an hour afterwards. The subsequent treatment was the same as in other cases.¹

MAGDEBURG.—For the province of Magdeburg, Veterinary Surgeon Hildebrandt has collected a large number of good observations on the epizooty. From these we learn that it appeared in East Prussia in the spring of 1838, and was seen in the cattle-sheds of the village of Warkau in May. In the beginning of June it attacked the herds and flocks on the Elbe, affecting more particularly cattle, sheep, goats, swine, and here and there a horse. It was general throughout the province in a short time after it appeared.² This author mentions several instances in which the disease was transmitted to mankind, and to other species than that primarily affected.

The epizooty spread into Hanover, Westphalia, Mecklenburg, and Holland, and extended always from east to west.³

MECKLENBURG.—In Mecklenburg it first appeared in 1838, and reappeared in 1839. Gilmeister, veterinary surgeon to Prince Thurn and Taxis, at Regensburg, in Bavaria, gives a good description of it in this part of Germany. He says: ‘In 1834 the disease prevailed in Hungary and Lower Austria, and spread rapidly to Bohemia, Saxony, and a great part of Prussia. In a few years after this it made its appearance in Mecklenburg. It entered the country at two points—viz., on the south and the west—and it followed a direction to the north and the east; and thus in a few months had not only invaded the whole country, but had spread to Western Germany, Holland, and France. I had at that time an extensive practice in Mecklenburg, and was therefore enabled to observe and study it in its different stages. The invasion and spreading

¹ *Hertwig*. *Magazin für d. Gesammte Thierheilkunde*, 1842, p. 389.

² *Hildebrandt*. *Über die Maul und Klauenseuche*. *Magazin für d. Gesammte Thierheilkunde*, vol. vi. p. 145. See also for a history of the epizooty in this province: *Andræ*. *Über die Gutartige Maul und Klauenseuche*. Magdeburg, 1839. *Henke*. *Zeitschrift für Staatsarzneikunde*, vol. xxxix. p. 1.

³ *Heusinger*. *Op. cit.* vol. ii. p. 500.

of these epizooties depend, I am inclined to think, on two causes—namely, miasma and contagion. In support of which opinion I would adduce, first, the apparently spontaneous and contemporaneous appearance of the disease in different and far-distant localities, between which there had not been any communication; and secondly, the uncommon rapidity with which it spread either in the same or in different herds that were dispersed over a large tract of country. No sooner had the disease shown itself in a herd of perhaps a hundred beasts, than in thirty-six or forty-eight hours the whole were infected; or, perchance, two or three might escape. As to the contagious nature of the disease, there will be very little doubt if we consider how readily it may be communicated by actual contact; as, for example, by taking a wisp of hay and wiping off with it the flowing saliva from a suffering animal, and bringing it in contact with the muzzle of, or allowing it to be eaten by, a healthy beast. This was always speedily followed by a disease bearing the greatest analogy in its symptoms and course to the one under which the first animal was labouring. The process of inoculating was frequently resorted to by the farmers, in order to have a more general outbreak of the infection, when once it had made its appearance amongst their cattle, and to produce it in a milder form, or, if possible, to get rid of it sooner. The mode of inoculating the disease was by transferring the matter on the point of a lancet or other sharp instrument; and thus the malady was communicated, not only to individuals of the same species, but also to animals of various classes, and even to the human being. Thus communicated to cats and dogs, it would often terminate fatally. I will not now enter into the consideration of those cases of apparent contagion—there can be no doubt about them; but in many instances may not the miasma have preceded, and the infection be in appearance only? There have also been instances where one herd has escaped the infection, though surrounded on all sides; but when this happened, it was generally in farms that were situated on the driest and most elevated parts of the country, and where the owners had taken the necessary measures against contagion. At other times, no local differ-

ence, or food, constitution, age, or sex, seemed in the least to modify the disease. The constitution of the atmosphere—viz., a warm spring and summer—seemed to have a peculiar influence on it.

‘It is difficult to notice the first symptoms of the epizooty. They are said oftenest to be those of mild catarrhal fever; rheumatic fever; an affection of the mouth; swelling or sores in the feet, or a complication of these symptoms; or pure asthenic or inflammatory fever. I have never observed the acute inflammatory fever; but that which I have seen was decidedly of the asthenic character, and at the same time of the typhoid form. Complication of inflammation of the stomach is of rare occurrence. I will now endeavour to describe the symptoms of the affection of the mouth in the ox. I mentioned a difficulty in the perception of the early symptoms. This consists in the casual fever, which in general is so slight, and passes off so quickly, that we are not aware that the animal is ill until the local affection makes its appearance, and the disease has almost come to its crisis. In the majority of cases the veterinary surgeon is not sent for until the fever has run its course, and therefore no opportunity is afforded him of seeing its invasion. In the course of my practice, when the disease had made some progress, and my services were called for at some farm or another, it has often happened that some beast, apparently in good health, has begun to dribble from the mouth, and on examination it was found that blisters had made their appearance. The fever in these cases had passed off unnoticed. This led me to watch the others more closely, and enabled me to detect the fever in many individuals in whom the general health hardly seemed to be disturbed up to the time that the exanthema made its appearance. Mastication and swallowing then becomes difficult and painful; the pulse seldom rises above 70 in the minute, and is weak and soft; the pulsation of the heart is scarcely perceptible; the mucous membranes are slightly reddened; the secretions and excretions are lessened; sometimes constipation prevails; the mouth is less moist, but not dry, and it is also hot. There is a general debility of the muscular system. In from two to

five days the vesicles make their appearance on the reddened tongue and gums ; they generally are of the size of a pea or small bean, and they are filled with clear fluid lymph. At this stage of the disease there is either loss of appetite, or the animal is unable to feed. In some cases, if not generally, there is great difficulty in swallowing ; for I have often seen the animal turning the food, after mastication, from side to side in its mouth, trying in vain to get it down, and at last letting it drop. This may depend on the swelling of the tongue, together with the local pain. I need not say that this stage of the disease is considered as the commencement, instead of the crisis, by the non-professional practitioner or empiric. The vesicles seldom rupture spontaneously ; this is done by mechanical pressure in the endeavours the animal makes either to masticate or to swallow its food. The dead epidermis peels off, leaving the parts covered by red spots, and showing the intense inflammation that had been going on. In a few days—from three to six—cicatrization takes place, the appetite returns, and the disease disappears, without, in those mild cases, professional assistance being required. Sometimes there is inflammation of the parenchyma of the tongue—glossitis. In these cases the swelling is so great that the tongue becomes too large for the poor sufferer's mouth to contain it. Scarification is here the best means of affording relief. Instead of the inside of the mouth, the local affection is sometimes on the outside of it ; but the hardness of the skin prevents the full formation of the vesicles. Desquamation follows, and cicatrization is much slower.

Differences.—In sheep the vesicles generally appear on the upper or toothless maxilla. These animals do not suffer so much as the ox, when the disease is confined to the mouth only. In swine the seat of the local affection is the proboscis, and the vesicles are of a blueish colour. These animals suffer more than the former. The invasion is also more marked, and is distinguished by dulness, an anxious countenance, difficulty of breathing, refusal of all food, and vomiting. I have not observed the disease in the horse. *The disease of the feet* makes its appearance in a similar way to that of the

mouth. The slight difference of fever is hardly appreciated, and of very little consequence. The seat of the local affection is the fibrous tissue of the last phalanx of the foot. The animal appears to experience much difficulty in walking; hence perhaps the idea that the fever was rheumatic in its character. I should add that it is still more difficult to distinguish the general symptoms than in the mouth affection. The difficulty in locomotion, the pain which the animal manifests in putting its feet to the ground, and the sudden snatching of them up when on the ground, announce the presence of the local disease. I generally found the interdigital space to be the first to show the vesicles. The skin appeared a little red when the coat of the animal was not of a dark colour; there was increased heat, and great swelling, followed by the appearance of vesicles. Frequently the disease extended to the heels and coronets. If more than one foot was affected there was very little chance of the vesicles being seen, for the pressure of the feet on the ground generally destroyed them before there was time for any satisfactory examination. In sheep the disease assumes the same form as in cattle, only it is not so acute, and the vesicles are more visible, in consequence of the mechanical pressure being less. I have not had any cases of the disease in the feet of swine. From what has been stated, it is evident that the epizoöty of the mouth and that of the feet are the same disease. Both begin with a slight fever, the crisis of which is the production of the vesicles; and it seems to be mere chance whether their seat is the mouth or the feet, or perhaps depending on some peculiar diathesis or predisposition—as the constitution of the animal, the manner in which it is fed, whether stabled or at grass, the locality, and, lastly, the constitution of the atmosphere. All these have undoubtedly a greater or less influence on it. . . . It is possible that the fever, on the first appearance of the disease, is one *sui generis*, similar to that in small-pox; and it cannot be denied that there is a great resemblance between the two. To prove the identity between the epizoöty of the mouth and that of the feet, I will add that I have not found them attack the animal at the same time; but they

generally follow each other at short intervals, so that few herds remained free from the one when the other had once appeared. It now remains to consider a few deviations from what has been considered the mild or benign form. The epizoöty, when the local seat has been in the feet, may progress and change into a disease *sui generis*. This does not occur when the local seat has been the mouth. But it is necessary to draw a distinction between this and a similar disease in sheep (*foot-rot*), which is a chronic, local, and highly contagious affection existing without fever, and which has only been known in Germany since the introduction of Merino sheep from Spain. . . . The malignant form of the disease in the feet of the ox and sheep showed itself in the month of June, 1839, and lasted until August of the same year. The mercury stood high in the thermometer, and many of the herds were still suffering from the disease of the mouth, while others had but just recovered. Many died of inflammation of the viscera. The farmers thought their cattle had recovered from the epizoöty, when suddenly some fell lame and remained behind, and, in cases where more than one foot was affected, were unable to walk, from the increased pain. There was also loss of appetite; the foot was swollen from the pastern downwards; the toes were wide apart; the connection with the inner wall of the foot appeared to be raised considerably, and there oozed from it a thick, whitish pus, which had a very offensive smell. The probe touched on every side a hard substance, and, on making an incision, it was very easy to remove a substance or core of the size of a hazel-nut, or sometimes as big as an egg. This substance was of a porous structure on the outside, and of a fibrous nature internally. It appeared to be an altered state of the vascular covering of the parts, as well as the surrounding cellular tissue. . . . In the worst cases the bones of the foot were not unfrequently attacked, the tendons and ligaments destroyed, and the foot in the highest state of sphacelus: this condition speedily terminated in the death of the animal. . . . In many cases that appeared mild at first, and were too often neglected, the animal would be observed dragging the loathsome and swollen

leg after him ; while at the coronets might be seen openings which led to deep-seated abscesses, out of which the matter was flowing at every painful step the animal was forced to take. On probing the part, nothing but the bones of the foot arrested the probe, the capsular ligament of one or both articulations being completely destroyed ; and not unfrequently exfoliation of the bone had taken place. . . . The average loss from the attack of this disease was about sixteen per cent. The deaths from inflammation of the viscera, above alluded to, and after the epizooty had subsided, were from ten to eighteen per cent. Five herds came under my notice. Death in many cases was so sudden that the veterinary surgeon was often too late. Of sixteen cases I had at one time, only two recovered. I considered this to be in many cases a typhoid inflammation of the heart.'¹

HUNGARY AND GALICIA.—In all probability, the disease prevailed in Hungary and Galicia about the same time.

STYRIA.—In the spring of 1838, and in 1839, it was general in Styria, not only among the domestic animals, but also among wild creatures in the forests.²

BOHEMIA.—In Bohemia it ought to have reigned about June, as in July it had become generally spread from that country into the kingdom of SAXONY, where the various circles issued proclamations in that month, in consequence of the epizooty having been introduced across the Bohemian frontiers.³

PRUSSIAN SAXONY.—In Prussian Saxony it may have commenced towards the end of June. A writer at Merseburg reports, that at that time cattle, sheep, and swine were affected with the so-called 'epizootic mouth disease,' and that the feet often suffered through metastasis. Feathered creatures—hens, ducks, geese, and pigeons—were attacked, but great loss was not sustained. Horses were also affected, but there was some doubt as to its being really ekzema, because of some differences in the symptoms observed.⁴

¹ Abstract of Proceedings of the Veterinary Medical Association, p. 340.

² *Kremer*. Mittheilungen (Österreich. Veterinaire, vol. i. p. 45.

³ *Pohl*. Archiv d. d. Landwirtsch. 1838, p. 191.

⁴ *Kreig. Casper*. Wochenschrift für die Gesammte Thierheilkunde, 1839, p. 561.

At Erfurt the malady continued during 1838, and the whole of 1839.¹

THURINGIA.—In Thuringia generally, it broke out in July, and was propagated thence, by Eisenach, in Hesse, in August. In Thuringia, sheep and cattle suffered most; but wild animals were not exempted, and Krügelstein states that the disease was readily transmitted to different kinds of creatures and people. Children and dogs received the infection by drinking milk obtained from diseased cows.²

BAVARIA.—In Bavaria, the epizooty was general on the north-west frontiers in July; but in all likelihood it had shown itself before that period towards the south-east. In 1841, it was still widely spread in that country, and oxen, cows, sheep, and swine suffered.³

WURTEMBERG.—The middle of the kingdom of Wurtemberg was infected in August; so that it may be presumed the malady had existed in other parts of the kingdom before that time. In Neuenstadt it was reported that a man who had used cream derived from the milk of a diseased cow in his coffee, had a scorbutic eruption in his mouth. The game-keeper complained that wild animals were affected.⁴

FULDA.—In the province of Fulda, Electoral Hesse, the epizooty appeared on the 17th of August, 1838, and cows, sheep, and pigs were attacked.⁵ Schneider reports that in this province a disease broke out among goats and cats, in addition to the before-mentioned animals, and lasted during the five months (August to December) that the malady was most severe. This epizooty in the goats and cats occurred in the villages and cattle-sheds these creatures frequented, and where the ekzema prevailed. The swine got the infection from feeding on the diseased cows' milk, and it was conjectured that the cats received it in the same way. Several people noticed that the deer had their feet affected. Instances were quoted of human beings becoming ill through using the

¹ *Dominik.* Magazin für die Gesammte Thierheilkunde, vol. x. p. 3.

² *Henke.* Zeitschrift für die Staatsarzneikunde, vol. xxxvii. p. 239.

³ *Archiv Schweizer Thierärzte,* vol. xi. p. 259.

⁴ *Jäger.* Correspondenzbl. d. Wurtemberg. Landw. Vereins, vol. xv. p. 252.

⁵ *Schwarz.* *Henke.* Op. cit. p. 459.

milk and butter derived from sick cattle, and suffering much from fever and the irritation of the eruption. Geese had the same complaint, and dogs also became diseased after partaking of the milk.¹

UPPER HESSE.—In the Grand Duchy of Upper Hesse, the epizoöty was announced on the 4th of September; it came from Fulda.²

In the province of Upper Hesse (Electoral Hesse) it first manifested itself on September 10th, 1838, when it affected the cattle on the frontiers, and gradually spread over the whole province. Cattle, sheep, swine, poultry and geese were the principal victims.³ Heusinger says: 'The disease was generally concealed by cattle owners. I have often observed it at Marburg and in the surrounding districts in 1839, 1840, and 1842; it even affected poultry at Burgel and Marburg. The outbreak in September, 1842, was particularly remarkable. After great heat and drought in July and August, the atmospherical electricity became considerably augmented, and from the 25th to the 28th great storms took place and showers of rain soaked the dried and burnt-up soil; this condition of the atmosphere was the same throughout nearly the whole of Germany. Immediately after these rains, many localities, and particularly the ramp leading from Marburg to Wehrda, were covered with such a quantity of edible mushrooms (*agaricus campestris*), that one might have filled great baskets in places where only a few dozens could have been gathered in previous years. At the same time, and all at once, the aphthongular disease broke out among cows and sheep, and in one large poultry-yard at least in my neighbourhood it attacked the fowls. Suddenly, and coincidentally, many children from two to six years old were affected with aphthous disease of the mouth; several little girls had the vesicles even on the vulva, and a large number of infants had aphthous inflammation of the mouth (*Stomatitis aphthæ infantum*), many of them being dangerously ill, and two died

¹ *Schneider*. Erfahrungen über die Maul und Klauenseuche. Freiburg, 1840.

² *Ritzen*. Medicinalwesen des Grossherzogthums Hessen, vol. ii. p. 415.

³ *Heusinger*. Op. cit. p. 509.

from *ramollissement* of the stomach. It is certain that these latter received milk from diseased cows.¹

District Veterinary Surgeon Struve, of Ziegenhain, on the borders of Fulda and the Grand Duchy of Hesse, reports, on September 20th, that the foot-and-mouth disease broke out in Gehan and Breitenbach, in consequence of foreign cattle having been driven through the country. On October 29th, the same occurrence is again reported, and it had become so general everywhere that but few escaped.²

SWITZERLAND.—The Swiss veterinary surgeons have not very accurately noted the progress of the disease in the various cantons; though they published some good treatises on it. At what date it arrived in their country is not clearly stated, but it appeared to have been at a somewhat early period; for in the month of September, 1838, it was very prevalent in Geneva. Here M. Favre, in a notice dated the 17th of September, says: 'The disease of stock, which has been generally designated under the title of epizootic aphtha, showed itself since the springtime in many communes of the Vaudois frontier, whence it has reached the Jura. It has actually manifested itself in some localities in the Canton of Geneva. . . . The disease is eminently contagious. Very few days elapse between the period of infection and that in which the symptoms appear. The infecting agent is energetic and subtle; for in numbers of sheds all the individuals are affected, with few exceptions, in three or four days. It attacks the bovine species without distinction of age or sex. It also attacks pigs; I have even noticed this year that in two localities it began with them. The contagion takes place by mediate or immediate contact—that is to say, an animal contracts the disease either by coming into direct communication with the diseased, or by dwelling in the same places, passing through them, by touching the objects infected, by their litter, saliva, etc. The infection takes place particularly by the feet and the mouth. The late M. Clerc, an able veterinarian in the Canton Vaud, told me that he had inoculated this disease by means of incisions made in the skin,

¹ *Heusinger*. Op. cit. p. 510.

² *Ibid.* Loc. cit.

without choice of situation, and always with success. It is not very well demonstrated as to whether the infection takes place by aëriform emanations—by the air impregnated with the vapour which escapes from the bodies of the diseased ; if this means of propagation exists, it is at least certain that it operates but at a short distance. The mode of extension in a manner purely epizoötic—that is to say, by unknown means which are in action over a greater or less extent of country—appears to be demonstrated by an extension much more rapid than the progressive mode assumed by a contagium. It would be puerile to attribute it to the temperature, the water, the forage, the exposure, the locality, etc., for it has reigned without distinction on the mountains, the plains, and the valleys, and during all seasons. Nevertheless, the epizoötic character has disappeared this year in this country, or, at any rate, it has become much modified, for the disease has been circumscribed and limited in the stables where a rigorous sequestration, opportunely adopted, has been enforced.¹

In the Canton Vaud, M. Levrat describes the epizoöty. ‘What is named the aphthous epizoötic, and which has prevailed at various periods in Switzerland, manifested itself in 1838, over nearly the whole of Europe, and it exists again in the Canton Vaud, and in many other Cantons of Switzerland. . . . The causes of this disease may be grouped in two orders ; the ones, presumable, tending to develop it, to cause its origin ; the others, better appreciable, develop and propagate it. Among the causes in the first category, I place those atmospherical influences which, up to the present time, have not been appreciable, and also those better known, as sudden or violent variations of temperature, and particularly a damp cold. These diverse causes may act over a wide expanse of country on cloven-footed animals, and in them produce the epizoöty, which again, when once developed, acquires a contagious character and propagates itself by contagion. If this disease may be developed epizoötically, as appears probable, experience also teaches us that it is contagious. It

¹ *Favre.* Instruction Relative à l’Epizoötie qui vient se Manifester. Geneva, 1838. Also in *Recueil de Méd. Vétér.* vol. xv. p. 653.

may be propagated in a manner mediate or immediate: by the emanations from the bodies of diseased animals which are affected with it; by the saliva that flows from the mouth; and by the humour from the vesicles in whatever part of the body they may show themselves. The contagium of this disease may be transmitted: mediately, by the people who look after the affected animals, and who have communication with those in health; immediately, by the pigs, the sheep, and the goats which are themselves attacked; and by the air to short distances. Well-attested facts do not leave any doubts in this respect. It was the pigs which communicated the malady to the cows on the mountains in the Canton Vaud. It was the pigs, the sheep, and the goats purchased in contaminated localities, which, having been transported to four, five, or six leagues distance, and put into healthy cow-houses, or passed into communes where the disease had not yet appeared, have become sick at once, or a few days after their arrival, and the cows in the stables in which these have been placed, although kept apart, have not been long before they, too, suffered from the same disease, which could scarcely be transmitted for more than a very short distance by the air; lastly, the majority of the cattle of the communes where the introduction of the diseased has occurred have yielded to the contagious influence of this malady. The bulls from infected farms have communicated it to the cows which they have visited, or which were brought to them from great distances. . . . In many countries the question has been discussed as to whether the milk furnished by diseased cows may be used with safety for the nourishment of mankind, and the German journals have announced that there is danger. The experiments which have been made in this regard by a crowd of people, and, above all, the experience which had been acquired every day while the malady lasted, in the neighbourhood of Lausanne, and amongst the population of that city, prove in an irrecusable manner that while the milk preserves its physical characters, and so long as it may boil without clotting, it is not hurtful to health. But it may be observed that in this disease, if the

teat be injured to that extent that it alters the secretion of milk, it is easy to conceive that in this case, as happens also in some lesions of the teats which are not the effect of this disease, the milk then drawn is improper for nourishment.¹

From Berne, M. Anker gives us an excellent treatise, dated the 18th December, 1838. He describes the symptoms of the disease very accurately, and speaks of its extreme contagiousness. Dogs, cats, and poultry largely extended the contamination when they frequented the stables or other places where diseased and healthy cows were kept. It was also surmised that the epizoöty was spread by the rats which wandered from the stables of the diseased to the healthy.²

In 1839, it was observed that at Berne and other parts of Switzerland the malady was panzoötic, the human species being involved to some extent.³ In the autumn of 1839 the affection appears to have been very severe and general.⁴ In 1841 it was again introduced into Switzerland, and in the Canton of Zurich cattle, sheep, and goats were attacked.⁵ Its highly contagious character was well understood by the Swiss veterinarians.

FRANCE.—We have traced the malady thus far in its progress westward during the course of the year 1838, and now we are come to France, where it might be expected to reign in the autumn. Much confusion, however, in describing the progress of the epizoöty would be caused to those not particularly acquainted with comparative pathology, did they receive the report of M. Duverdier, a physician of Marsillac, as a correct one. This gentleman assures us that an aphthous disease already prevailed in March and April, 1838, in the department of Cantal, Auvergne, and he describes this affection; which description, together with what he says in his introduction, leaves no doubt that he could not distinguish between the aphthous foot disease of Sagar and an epizoöty of glossanthrax. There can be no doubt that the malady he noticed was only a benignant form of glossanthrax, a disease enzoötic in Auvergne. In this respect his description is valuable, as

¹ *Levrat*. Recueil de Méd. Vétér. vol. xvi. p. 409.

² *Anker*. Anleitung zur Erkenntniss u. s. w. der Maul und Klauenseuche. Bern, 1839.

³ Archiv Schweizer Thierärzte, vol. ix. p. 389.

⁴ *Ibid.* p. 203.

⁵ *Ibid.* vol. xi. p. 229.

affording a contrast between the two affections. He writes : ' Its invasion is always difficult, if not impossible, to recognise. The animals which are under the influence of the malady are without fever, and externally they offer no particularly morbid signs ; they eat and drink as usual, appear lively and in good condition, and bellow and bound about when they go to water ; rumination is scarcely affected ; the coat is neither harsh nor staring ; the eyes are neither dull nor watery ; the ears are not low or pendulous ; the skin is generally soft and elastic, though sometimes it appears dry and crepitant. There is nothing to assure us of the existence of the malady save an examination of the tongue, on or under which we have found sometimes one, at other times many, ulcers or aphthæ, which at the centre looked lardaceous, around their margins callous, and in form and figure more or less irregular ; this was the most benignant form of the malady. Those aphthæ or ulcers which have not been attended to at first, through neglect or ignorance, have given rise to the formation of transverse, deep, and oftentimes fistulous ulcers, which in a few days have eaten into and caused the loss of a piece of the tongue. In many subjects a brownish tumour, more or less salient, forms under the tongue near the frænum (*filet*) ; false membranes, thick and callous, form a swelling of an irregular shape, which covers a foul black ulcer more or less deep. At the summit of this tumour there are perceived one or two holes, which we may believe to be fistulous, because they are depressed in the middle, like those usually met with in furuncle. This tumour, which constitutes the glossanthrax, demands prompt attention. When it is neglected it gives rise to eroding ulcers more or less deep, which, independently of the ravages they induce on the tongue, cause disorder of the nervous system. Fever is only manifested when the ulcers have made some progress ; the animal then becomes dull, prostrated, unsteady ; rumination ceases ; all kinds of food are refused ; the secretion of milk becomes scanty ; and if we do not hasten to arrest the progress of the disease, gangrene gradually extends to the larynx and pharynx, convulsions set in, and death ensues. M. Fillais, who has attended to a great number of

diseased animals, and who, in his capacity as veterinary surgeon to the district, was able to observe the epizooty at several points, informs us that he has seen in many patients a considerable swelling of the tongue, which rendered it hard, tense, rigid, and so voluminous that an animal's mouth could not contain it. Deep scarifications, long and repeated, have caused copious hæmorrhage, and have generally sufficed to stay the progress of the malady. M. Fillais has also observed in the same subjects an œdematous state of the lower jaw, extending from the symphysis to the middle of the submaxillary space. This veterinary surgeon has likewise noticed that since the weather changed—that is, since the cold set in—the malady has diminished in intensity and become more rare. He has noted that it was more intense in the communes of Labrousse, Roussy, Lessières, Leucamp, and Ladinhac, than in those of Arpajon and Saint-Simon ; and he attributes this to the difference in climate and forage. In general there have been but few deaths; the disease, when timeously treated, has yielded to the most simple means, to the most ordinary treatment. Nevertheless, the malady has become all at once so general, that fear hangs over the country, the authorities are pressed to send veterinary surgeons to the points where the contagion is most virulent; but if the malady is combated in time—because everyone can avert it—there ought to be no alarm. The causes of the reigning epizooty are, in general, little known to us ; we may, nevertheless, attribute them to the miasmata and putrid emanations which are the result of the crowding together of animals in small dirty and badly ventilated stables, to the want of exercise; to the apathetic nature of the animals; and beyond all, to the humid and catarrhal atmospheric constitution which has reigned during the whole of the winter.¹

ALSACE.—For this part of France, then forming the departments of the Upper and Lower Rhine, M. Joulin, in a manuscript memoir transmitted to the Royal and Central Society of Agriculture, states that the epizooty appeared in the months of August and September, 1838.²

¹ *Duverdier*. Recueil de Méd. Vétér. vol. xv. p. 392.

² *Annales d'Hygiène Publique*, vol. xxii. p. 279.

LORRAINE.—In the month of October, 1838, M. Matthieu, veterinary surgeon at Epinal, furnished a circular containing instructions as to the best method of treating the malady. This circular was inserted in the *recueil* of administrative acts of the department of the Vosges;¹ it also appeared in a veterinary periodical. It contains the following statement: ‘The aphthous fever, named also aphthous stomatitis, has for some weeks past been attacking horned cattle and the smaller stock of the department. . . . Affecting nearly all the beasts in the localities where it breaks out, it occupies, it may be said, every hand, and its appearance has put the farmers on their mettle. Its causes remain until now ignored, as do those of the majority of the epidemics and epizooties. It was believed, however, that these causes were the immoderate use of potatoes, the bread or cakes of beechmast, too new, non-fermented forage; but our observations are far from confirming this. The malady reigned in all seasons, therefore the influence of temperature cannot be invoked; it is the same with stables and regime. With regard to contagion, this is also doubtful. . . . In the majority of communes the influences under which aphthous fever is declared amongst horned cattle are of such a nature that they have extended their operations to other species of domestic animals. Thus it is that the smaller cloven-footed animals, as the sheep, goat, and hog, have been attacked. This result has even raised the cry of contagion. It has been also advanced that the people who have drunk the milk of diseased cows have experienced colic, and afforded other proofs of indisposition. If disgust alone has not occasioned these accidents, to which we have never been a witness, no more than of the appearance of this disease in the horse and the ass, would it not be more rational to attribute all these general affections to an epidemic and epizootic constitution of the atmosphere, very evident certainly for some months, and unfortunately so favourable to the development of diseases of the digestive canal?’²

¹ *Annales d'Hygiène Publique*, vol. xxii. p. 279.

² *Matthieu*. Notice sur la Fièvre Aphtheuse Epizootique. *Recueil de Méd. Vétérinaire*, vol. xvi. p. 16.

PARIS.—The disease in all probability appeared at Paris in November, 1838 ; for in December MM. Leblanc and Rayer published their observations, and in March, 1839, M. Huzard issued a report on it. The epizoöty raged in this city and its neighbourhood during the whole of the first half of 1839, almost every cow-shed being visited by it. Many observers belonging to the veterinary and medical professions were actively engaged in investigating its nature ; and the city authorities, alive to the necessity of obtaining reliable information concerning it, from an economical and sanitary point of view, appointed a Commission named by the Academy of Medicine. The result of its labours was published on March 15th, 1839, by Veterinary Surgeon Huzard, in the name of the Commission.¹ The report is a long one, and contains a brief and incomplete history of former invasions of the disease, and the symptoms, which are carefully described, appear to have offered no unusual features ; indeed, there is nothing of any importance to be noted in the account furnished by this Commission, if we except what is said as to the alterations observed in the milk yielded by sick cows, and its effects on people.

With some authorities it was a matter for doubt whether the epizoöty was or was not contagious ; though the most competent observers decided as to its being transmissible. Professor Bouley of Alfort, near Paris, in 1839 had a startling proof of this. The malady first appeared in some Durham cows lodged in the sheds of the Veterinary School ; it spread from them to all the other animals kept therein—cows, bulls, and calves ; then it was carried to a contiguous dairy, and affected all its inmates, irrespective of age, sex, or species, as three goats which were stabled with the rams and Merino sheep were, like these, also attacked ; lastly, the pigs, whose sties were situated near the cow-houses, exhibited symptoms of the disease.²

The best treatise produced at this time was that written by Veterinary Surgeon Rayer.³ His history of former outbreaks

¹ *Annales d'Hygiène Publique*, vol. xxii. p. 269.

² *Recueil de Méd. Vétérinaire*.

³ *Rayer*. *Recueil de Méd. Vétér.* vol. xvi. p. 142. The same memoir, enriched with drawings and containing more ample details, is also to be found in the

is more complete and correct, and the description clearer and more exact, than in other accounts; the researches on the microscopical and chemical characteristics of the milk are particularly worthy of notice.

NORMANDY.—In the valley of the Auge the epizooty prevailed in the summer of 1839; but in Bessin it did not arrive until May, 1840. Veterinary Surgeon Levigney furnished a very interesting account of it as it manifested itself in this part of France: 'For the last three years the dealers in heifers and pigs complain of losing daily on the value of the droves which they take to Paris and elsewhere. This loss, they say, was occasioned by a malady known by the name of *cocotte*, which attacked nearly the whole of their animals, and prevented their walking; so that it was necessary to leave them on the road when once they were really attacked—a circumstance which created a serious expense; or they were obliged to sell them at a very low price. It was always near Pacy-sur-Eure that the droves began to show the first symptoms of the *cocotte*. At that time we were far from observing that this disease came nearer and nearer, until it arrived in Bessin; we founded our opinions on the fact *that the animals always went to Paris, and that they never returned towards Bessin*. But we deceived ourselves; the epizooty travelled very slowly, it is true, but *it always advanced from the east to the west*. It was an entire year in Auge before a single case showed itself in Bessin. The dread of the disease caused great consternation amongst the farmers of this district, the wealth of which, for the most part, consists in their herds of milch cows. The secretion of milk ceasing or diminishing very much would likely bring ruin on these men, who, it may be said, have nothing to depend upon to pay their landlords but what they realize from the sale of their butter, which they send to Paris. But the affright was at its acme when it became known that the malady was approaching, and that it was only a few leagues from Bessin. The markets, as well as the cattle-fairs,

became deserted ; nobody would send their beasts to these places, fearing that they would not be able to sell them, or that they might have communication with diseased ones, or those that had been with the infected. These precautions were useless ; the epizoöty came.

‘ It was in the month of May, 1840, that, for the first time, I had occasion to observe the disease in a cow belonging to M. Enault, Isigny. His servant showed it to me on the highway. The six cows that were with this one were not long before they were infected ; the bull which had been with them having jumped the ditch that separated it from a herd of fifteen cows belonging to M. Lebourgeons, residing at Isigny, got amongst these, and they were all in a very few days attacked with the malady.

‘ During the summer of 1840 the epizoöty prevailed feebly here and there, in the proportion of one affected to eight healthy animals. In the autumn the cases were few ; the winter was about the same ; but in the springtime of 1841 the outbreak of the disease was dreadful—it seemed to spare no creature. All those which had resisted it in the preceding year were attacked in this. It usually advanced step by step, and when by chance it spared for the moment a farm or a meadow where there was a herd, it was sure to appear afterwards. At the time I now write, the only exceptions I know of are five or six farms containing scarcely three hundred horned cattle, out of more than twenty thousand which are in the Cantons of Balleroy, Trévières, and Isigny. . . .

‘ But there is nothing, absolutely nothing, to indicate that any of the previous invasions of this disease had ever before appeared in Bessin. The oldest people have never seen it, nor yet have they ever heard their ancestors speak of it. It is impossible to attribute the epizoöty to the influence of the atmosphere, to the bad quality of the forage, or even to localities. The year 1840 had been cold and dry, the year 1841 cold and damp, and nevertheless the disease showed itself alike in both years, and in every place. We have seen it reign at the same time, and with equal intensity, on the sea-coast, on the plain, and the marsh. The rain, snow, dry-

ness, calms, and storms all appeared to favour its development ; advancing sometimes regularly, it might be, in certain herds, attributed to contagion, in others to an epizootic influence, but most frequently without any certain proof of either. With a farmer who possessed some five or six herds of cows, it frequently happened that a sick herd infected another, and that the other four herds were not attacked for six months or even a year afterwards. During the winter, the cows which were in the straw-yard (*cour de l'habitation*) being diseased, were not allowed to go into the four cow-houses which stood around this yard, nor into the meadows ; at other times it was the contrary.

‘In many outbreaks the epizooty began with the cows ; in others—for example, with M. Voison, of Maisy—it first attacked the pigs ; or the sheep, as happened to M. Tailpied, of Engelsqueville. The development of the disease is often so capricious that in some cases one is tempted to deny its contagious qualities, which in others are quite evident. We could scarcely refuse to admit the idea of its being contagious when we saw, in the herd first affected, that the cow which infected the others had been purchased at the fair of Balleroy, and that before its arrival there had never been seen such a disease in the district, nor yet for many leagues around. In four days, all of the herd in the midst of which this cow was placed is attacked. The bull goes with four other cows, and in about six days they are all sick, notwithstanding the precautions taken by the proprietor to isolate each cow the instant it began to appear dull. They were removed to the farm, where they quickly gave the disease to the pigs ; and from here two more dairies were infected.

‘M. Binet, of Saint-Clement, took a number of cows to the fair of Trévières, and brought one back with him. This he put with his other cattle, and it showed symptoms of the malady, which it communicated to its companions ; and it is well to notice here, that until then there had been no case of this epizooty, either in the commune of Saint-Clement or in the neighbourhood. I might cite many other facts of this kind, every one of which are in favour of the

opinion that this epizoöty is contagious ; but here are others which are in favour of the contrary opinion.

‘M. Peissy, of Fontenoy, had many sick cows, and he was desirous that twelve heifers, two and three months in calf, should contract the epizoöty. He put them all into the same pasture, the sick with the healthy. The heifers ate the hay which was impregnated with the saliva of the infected beasts. Not one of them took the malady, to the great disappointment of the owner, who feared that they would be attacked about calving-time—a circumstance which actually happened to these twelve heifers.

‘It very often occurs that many herds of oxen and heifers have passed the night in the same meadow: one herd is found to be infected, another is not. In 1840, nearly two hundred horned beasts of every description and of every age had been allowed to go at large in the marshes of Cambes. The disease broke out a short time after they came together ; they all remained in this place for about four months, yet not more than a fourth part of the number was attacked. I had at this time three lots of cows fattening, and always took the greatest care to keep together the last purchased, to prevent, if possible, the malady from seizing those which were the best conditioned. A grazier came and told me that the cows which he had bought at the last fair, where I had purchased mine, were ill. On that evening I removed one of them from the others, and the next day visited them. The four that had been purchased all appeared to be affected ; the others were so at a later period. The cow that I had separated was put in the same meadow with eighteen others belonging to me, and remained there for eight days. It was in good health until this time, when I observed that it was dull and did not eat ; it was instantly separated from its companions, which were for a week afterwards in good health. Then two cows were attacked, and in eight days a new case presented itself. In the course of a month, one, two, or three cows became sick each week ; and—odd circumstance, but due without doubt to chance—it was always on the Monday or Tuesday that I remarked the earliest symptoms. When these two days were got over, I was nearly

always certain to be eight days without another new case. The malady ceased in this herd, but then it attacked my third, composed of twenty-three cows. Three of these were attacked, then another from time to time ; but scarcely more than one-half of my fifty cows were ill. May we attribute this fact, rare, it is true, to the mixing together of individuals purchased in different places, not having been bred in the same localities, and on which the malady might not have the same influence? It is very difficult to admit this, when we see that M. Dammène, my neighbour, placed in exactly the same position as myself, out of more than sixty cows which he possesses, has only had two exempted from the epizoöty.

‘With the Mayor of Saint-Pierre-Dumont, the disease broke out during the heavy snow, in a meadow situated on the sea-coast, and more than two leagues away from infected cattle. In the space of ten days his other two herds of cows which were at pasture, those which were in stables, the year’s calves, those of two and three years old, and his lean pigs, were all attacked ; only his fat hogs were spared. There was not a case amongst the animals belonging to his nearest neighbours, with the exception of a herd belonging to M. Viet, whose cows were all affected. The epizoöty ceased, and did not reappear in this canton for more than six months after. With M. Lecanu, of Maisy, more than sixty horned beasts were attacked in three days.’

This writer’s description of the affection is very clear and correct, but he only gives the symptoms in somewhat more detail than the other observers, and offers no unusual features. He then goes on to say : ‘In ordinary cases it is rare that the cows are more than ten days before they take to their food again ; then lactation begins ; all the mouth-and-foot symptoms of the malady seem to disappear ; but then ensues the disease of the udder which, as well as the teats, becomes more or less thickly covered with pustules, which are sometimes even confluent. In all the dairies of Bessin, when the mammary eruption has been observed, it has been eight days, fifteen days, and even three weeks after the mouth and feet have been cured. It is very rare to see the disease affect the

udder and the other parts at the same time. In many herds this gland has not been attacked, or but very slightly. The vesicles on it are whitish, transparent, and crystalline in their centre ; as they become older they have a yellow tint, and at last become nearly red around their margins. A fact which is nearly always constant may assist us in discovering what the nature of this disease of the mammary glands may be ; it is this, that a great number of cows of different herds have transmitted these pustules to the people who usually milk them, and who have cuts or excoriations on their hands or arms. It is necessary to remember this truth, that it is only with non-vaccinated people that the pimples or vesicles are so developed that they sometimes become confluent, and are so numerous that these persons are not only obliged to give up milking, but every other kind of work. With vaccinated people this condition was replaced by small red spots and a slight itching. The vesicles pass through the same phases as those which are produced by the vaccine virus, from which they do not appear to differ. I think we may consider them as being of the same nature as the cow-pox. When the pustules (*boutons*) are burst, the act of milking makes the teats and the udder bleed ; the cow experiences acute pain, and becomes restive. This state may become complicated in a serious and troublesome manner, for it may happen that one or more of the teats increases in volume, and that the inflammation attacks the mammary glands, especially if there are any pimples about the teat which obstruct its canal ; then the inflammation becomes very acute. It may terminate in many ways : *a.* By resolution, which is very rare. To attain this result it is necessary that the canal be not entirely closed, but that the milk may escape along its whole length. *b.* By atrophy ; then the lactiferous functions are destroyed, and do not return, even after the cow has had another calf ; they are entirely suppressed. *c.* By suppuration ; in this case the milk remains in the gland, becomes decomposed there, and forms purulent accumulations which tend to work to the surface ; it then escapes, portions of the gland slough away, and the cavity fills up and cicatrises ; but soon there are formed other

abscesses which go through the same process, and these are replaced by others, until nearly the whole of one or several glands are destroyed, and even the whole of the teat. *d.* By gangrene; then the gland or the entire teat comes away in a single piece, and exhales a most nauseating odour. The induration of the glands also happens sometimes as a consequence of suppuration, or of chronic inflammatory swelling; then the organ is hard and insensible, often also the teat is wholly or in part gangrenous. In this condition, if we attempt to empty it, we only draw with difficulty a reddish, bloody matter, possessing an extremely foetid smell. This complication is much to be dreaded, for not only does it entirely or in part suppress the secretion of milk, but it also takes away the animal's appetite; it becomes emaciated, falls into a kind of marasmus, and never becomes fat. . . . I cannot finish that which relates to the cow, without refuting an error which is wide enough spread. It has been said that the milk of the cow, during the malady, and even for a long time after, is bad and unhealthy. It is not so. In the first place, it was said that before the invasion of the epizooty, a pustular disease somewhat similar to it was seen in Bessin; according to many physicians and veterinary surgeons, it attacked men and animals. The cows' milk remained the same. During the epizooty, so far from losing any of its good qualities, it was on the contrary more rich in butter, and all things being equal, the same quantity of milk given after the disease yielded more butter than before, a circumstance that astonished the farmers. Although the pigs had only been attacked in the feet, the disease was none the less troublesome, especially to the dealers. It was all the more serious when these creatures were travelled much on the road. The instantaneous shedding of the hoofs was the consequence; the first thing noticed was the separation of the horn, and its loss was almost immediate. The journeys these animals made doubtless augmented the intensity of the malady; but this was not the primary cause, for in the farms of Bessin the hogs which scarcely ever moved out of their sties felt, and that strongly, the effects of the epizooty. The sows which

were suckling have suffered much, and have even succumbed to the effects of the disease, while their young also experienced great distress, and often died suddenly. The younger they were, the greater was the mortality among them.¹

The tardiness with which the epizoöty crept along in these years in the west of France contrasts curiously with the speed it assumed in its course through Germany in 1838. It took a year to come to Brittany from the extreme west ; it reached the canton of Quimperlé, department of Finisterre, in January, 1842. Veterinary Surgeon Binet writes from this place as follows : ‘An epizoötic aphthous affection, which had never in the memory of living man been in this locality before, showed itself this year with great intensity, and spared but a small number of cattle in the arrondissement. From the symptoms I have observed, it appears to me to be of the same nature as the disease which in 1764 broke out in Moravia, where it attacked the cattle, sheep, goats, and pigs ; in the years 1808, 1810-11, in the departments of the Nord, and in the last instance, in 1819, in the department of the Loire. Should we consider the malady that I am about to describe as contagious? I think not ; for although it has followed a progressive march from north to south, and though we are inclined to believe that the great trade in cattle among the inhabitants of the country has contributed much to propagate the malady, nevertheless I have on many occasions observed that an ox or cow coming from a district where the epizoöty reigned, and put into a cow-shed where it did not exist, did not communicate it to the others, and was alone affected ; nothing in the form of the disease occurred in these stables as a consequence. Besides, it is easy to find a cause for this affection in the continual rains which prevailed during the year 1841, and in the bad quality of the forage made in this year. The epizoöty had principally attacked the horned cattle ; nevertheless, pigs and horses have not been exempt. The following are the symptoms I have observed : At the commencement the animal eats but little ; the muzzle is dry, there is

¹ *Lezigney*. Recueil de Méd. Vétér. vol. xix. pp. 761, 855.

dulness; the fæces are dry and black, sometimes streaked with blood; the mouth hot and slimy; the tongue shows a great number of small, red elevations, the summits of which become white in a short time, and they are often so closely interspersed that not unfrequently they coalesce and form but one. At this time, if we catch hold of the tongue for the purpose of inspecting the mouth, the mucous membrane of that organ comes entirely away, as if it were a sheath, leaving the tongue quite raw. These aphthæ are also observed on the muzzle, at the orifices of the nostrils, the roots of the horns, and between the hoofs; in this case they occasion much lameness. In cows they become developed on the udder. Intestinal irritation is manifested by slight colicky pains and the dryness of the fæces, which, as already mentioned, are sometimes streaked with blood. The disease manifests itself very slightly in the larger ruminants, but a peculiarity worthy of remark is, that all the calves reared by cows having aphthæ on their teats perished; they appeared to ingest along with the milk the germs of the malady, which, at their tender age, they had not strength to resist. The autopsy of these young animals has not revealed anything more than an amount of intestinal irritation intense enough to cause death. The epizooty has prevailed somewhat severely among pigs; in those which died, and which I had an opportunity of examining, I have also observed the lesions of gastro-enteritis, of which the aphthous affection only appeared to be a symptom.¹

The Annual Report of the Lyons Veterinary School informs us that the malady was in that locality in 1839-40.²

Various reports were published of new outbreaks in different parts of France for some time after the invasion of 1837, even so late as 1845. Reynal witnessed an irruption in October, 1841, at St. Avold, Moselle, when cows, pigs, and sheep were affected.³

ITALY.—In Italy the epizooty extended from west to east, and the public papers announce its outbreak in Upper Italy

¹ *Annales de la Soc. des Vétér. du Départ. du Finistère*, vol. iv. p. 12.

² *Recueil de Méd. Vétér.* vol. xvii. p. 688.

³ *Reynal.* Ibid.

in 1838. In Central Italy, from the absence of any mention of its appearance in the journals for 1838, it may be concluded that nothing was known of it until 1839. In the spring of this year, however, it is reported from the upper valley of the Arno: 'At the beginning of the spring the "lameness" (*zoppina*) appeared with us, but not in a malignant form; nevertheless it greatly interfered with trade.'¹ In the summer it is stated: 'Amongst cattle the "lameness" is spreading, but benignantly.'² The accounts of the malady in this country, and particularly in the journal from which these extracts are taken, are very exact and complete, but none of them, except the above notices, refer to the time of invasion.

NAPLES.—The malady arrived in August, 1839. The veterinary professor, Signor Valentine, reports it under date of the 30th August: 'The regular visits I made, along with the governor of markets, to the slaughter-houses of this city in 1834, gave me an opportunity of studying, though somewhat superficially, the malady which attacked cattle, and was also common among sheep and pigs. Now that the same disease has shown itself in different provinces, I have been desired by his Excellency the Syndic, the Duke of Bagnoli, to make a tour of inspection of the districts around the capital, for the purpose of discovering if any animals were infected, and this I have done. . . . This malady, commonly known in Naples as "ambolla," has received different designations in the several departments of the kingdom by the learned as well as by the ignorant, such as "enzoötic lameness" (*zoppina enzoötica*), "enzoötic aphtha" (*aftha enzoötica*), "vesicular disease" (*mal di ambolla*), and "mouth disease" (*mal della bocca*), and is often confounded with glossanthrax, etc. These names, which express different diseases, have given rise to equivocal ideas in the minds of some people who have not sufficiently studied the malady, and who have consequently classified it according to their own convenience. . . .

'At the commencement the animals are somewhat dull, and manifest more or less febrile disturbance; there is a diminution or cessation of rumination; mucus and foam flow from

¹ Giornale Agrario Toscano, vol. xiii. p. 259.

² Ibid. p. 383.

the mouth and nostrils. When the mouth is examined, we see the mucous membrane is unusually inflamed ; the gums are swollen ; there is also a preternatural redness of the membrane lining the nasal cavities, and the secretion is so augmented as to look like an incipient catarrh. There is difficulty in eating, and in cows the secretion of milk becomes altered. There is lameness in the feet in this disease. One symptom I have observed in the present malady is cramp (or spasms) of the posterior extremities, particularly in those animals which have not the pustules or ulcerations of the feet. After the second or third day of the febrile attack, which is accompanied by diminution or cessation of rumination and by difficult digestion, and the mucous and frothy discharge from the mouth, the aphthæ show themselves as small vesicles on the internal parts of the lips, on the margins of the tongue, on the frænum, palate, and particularly on the gums ; the vesicles continue to enlarge, and become confluent in various places, and change into so many ulcers ; they are of a white or yellow colour, acquire the size of a pea or a bean, and become filled with a viscid lymph, which afterwards becomes puriform. Sometimes lameness sets in simultaneously with the above-mentioned symptoms—the feet swell, and the hoof becomes very hot ; which condition announces the formation of an inflammatory tumour between the toes. The vesicles having coalesced, there is emitted a humour which flows like that from a scald or burn. The pustules begin to dry up about the fifth or seventh day of their eruption ; after which the epithelium in these parts detaches itself, and recovery takes place. The ulcers which develop themselves on the body and on the sides of the gums heal spontaneously ; but at other times, as I have witnessed, under the unfavourable circumstances of bad management, a hot summer, an intense heat, etc., the disease in these parts has lasted much longer, and the sores have occasioned various local alterations ; they extend, become deeper, and produce alveolar abscesses and fistulæ, and the teeth fall out. Ocular inspection and slight pressure have often enabled me to discover the formation and existence of matter between the teeth and the alveolar cavities, which

induced the latter to swell. I have frequently seen the textures of these parts altered, and producing various and numerous hypertrophied masses like so many of those fleshy tumours of a fungoid nature called "figs," or condylomata, etc. These parts being thus altered, the animals masticate with difficulty, and ruminate very slowly. At other times, when recovery has taken place, these tubercles and the altered tissues about them become callous, and supply in part the loss of the teeth. The cure is easily effected, and without the use of any therapeutic remedies, in a few days.

'Dry spring-weather, scarcity of herbage, and atmospheric variations, should all be regarded as circumstances which, having been general over the kingdom, were likely to produce such an epizooty as this. The protracted and excessive heat of the summer season, by rendering the fields arid, deprives the vegetation of its nutritious principles, which are necessary for the regulation of the digestive process. The plants have not only been altered by this aridity of the soil, which prevented their obtaining the materials necessary for their proper growth, but also disposed them to the depredation of insects, which have altered their parenchyma and organization. The direct and continuous influence of the burning heat of the summer throughout the entire season, upon both vegetables and animals, has contributed to upset the great digestive, depurative, and nutritive functions, and induced in the animal organism a morbid condition, which beneficent Nature has removed by means of the critical production of a local malady. To induce such an affection, the mechanical effect of the hard and dry herbage, rendered so by the heat, mainly contributed, giving rise, as it did, to a hot and slightly inflammatory state of parts of the mouth; while the hardness of the soil produced the disease in the feet.

'By many people similar exulcerations have been confounded with "cancro volante" and glossanthrax. Besides all this, we at the Veterinary School, in this emergency, have received information concerning this disease from some district veterinary surgeons, declaring it to be contagious. But that the malady is a contagious one is disputed, because of its benignity(?),

and particularly because of its reappearing in certain seasons, through recurring and palpable causes ; also from its having been observed that many healthy animals of the same species, after mediate, or even immediate contact of the matter from the local alterations, which was inoculated in the thin membrane of the lips, palate, etc., have remained free from the above-described malady.¹

GREAT BRITAIN.—The ekzematous epizoöty being entirely unknown in this country previously, its sudden advent caused much confusion and alarm among veterinary surgeons, no less than among agriculturists. Though at first its attacks were comparatively mild, yet the fact that it was a 'new murrain' seems to have diverted the attention of professional men from investigating its source, or even inquiring if it existed, or had ever been seen, elsewhere. For this reason, and from its appearance being generally believed to be due to 'something' in the air, no attempts were at first made to ascertain its commencement in the kingdom. The subject of imported animal diseases had attracted no attention ; nothing appears to have been known of those deadly contagions which prevailed more or less frequently and seriously on the Continent, and which might at any moment be introduced among the hitherto uncontaminated herds and flocks of our island.

Some writers speak of the malady as first manifesting itself on the east coast of Norfolk, but we have no positive proof of this. Finlay Dun asserts that it appeared in England in the spring of 1839. 'It was first observed in some of the south-eastern counties ; but whether it sprung up spontaneously, or was imported from the Continent, does not seem to have been clearly ascertained. It is, however, extremely probable that the malady was brought from abroad, either by the introduction of cattle, or of the skins of animals that had died from the disease, or been slaughtered while under its influence. But, whatever may have been the mode of its origin or introduction, it soon made itself widely known throughout England, and rapidly spread both to the west and to the north.

¹ *Valentini.* Della Epizoozia Aftosa sviluppata tra gli Animali Vaccini nella stagione estiva del 1839. Naples, 1839.

Within a year of its first appearance in England, it had committed extensive ravages in Ireland, and had engaged the attention of many practitioners north of the Tweed.¹

An Irish newspaper at the commencement of 1841 says: 'The disease among cattle—a sort of influenza—travelled through Spain, Portugal, France, Switzerland, Holland, Belgium, Bohemia, Hungary, and Prussia, making its appearance in England about two years ago, on the eastern coast, and is now raging with considerable violence in the west. It thus appears to be following the same course as the cholera took.'²

Professor Sewell, under date of July 1, 1841, reports: 'The disease had not made its appearance in England before the summer of 1839, and with few exceptions had broken out in the stock of those members' (of the Royal Agricultural Society) 'who have sent communications. . . . Some members state that it prevails in their immediate neighbourhood, and others at several miles' distance. It is generally reported not to have prevailed extensively before 1840, and then to have attacked all kinds of stock indiscriminately, even poultry, dogs, cats, and deer. Influenza, by some called 'distemper,' catarrhs, and sore throats, prevailed much among horses before the epidemic (epizoöty), during its prevalence, and after it had ceased, and pulmonary diseases proved fatal in several cases. As far as situation, nature of the soil, and general features or aspect of the country are described, no exemption from disease is recorded, whether mountainous, hilly, flat, wooded, or open, dry or damp, intersected by rivers or canals, or in the vicinity of marshes, ponds, ditches, or any stagnant waters. It has been attributed by some to the prevalence of east or north-east winds; others supposed it induced or brought by the south and west winds. Some are of opinion it has been produced by fogs, and abounded more in valleys, on the banks of rivers, and low damp situations; others attribute the outbreaks to communication by the herdsmen, shepherds, or persons employed about cattle. Its attacks

¹ *Dun.* The Veterinarian, vol. xxiii. p. 686.

² The Dublin Evening Mail.

appear to have commenced, whatever was the quarter from which the wind blew, and under all temperatures, throughout the year, commencing and ceasing at uncertain periods ; and the disease did not vary in its symptoms except when the atmospheric temperature was highest ; then inflammatory action was more intense, and the disease more fatal, especially among animals that travelled to fairs or markets ; by which it was introduced into premises and farms heretofore exempt, and thus became disseminated in healthy districts. Fever was increased by fatigue in travelling. The feet became acutely inflamed, causing the hoofs to shed or exfoliate, and many animals were in consequence slaughtered on the roads. Young animals appeared to be more exempt from attacks than the full-grown ; but in comparing the number affected, it was more fatal, and often more speedily so, in them than in the adult animals. The house and exposed stock of all ages and conditions were equally subject to attacks from general causes. In some cases, supposed to arise from infection or contagion, the symptoms appeared as early as the second day ; in others several weeks elapsed after exposure to the infection before they made their appearance. One correspondent states that himself and all his family and domestic, were attacked on the lips and in the mouth in consequence of using the milk of his diseased cows ; and that a foal living with them had an attack of farcy and glanders of which it died. (The following circumstance was related to me by the dairyman of a large farm in Dorsetshire : The smell of fresh blood often affects cows in a straw-yard, making them appear as if frantic. After milking the diseased cows, the dairyman overturned the pail in the straw-yard ; the cows were greatly excited in the same manner, smelling at it, and fighting to keep each other away from the spot where the diseased milk lay.) The disease generally commenced in the mouths of bullocks, cows, and calves, by the appearance of blisters and ulcers on the tongue, and sore throats in some ; the feet at the same time, or very soon after, became ulcerated, as also the palate, lips, and nose. It was accompanied by rigors or chills, succeeded by feverish heat. The noses and feet of pigs

were attacked, but the feet only of sheep, except in a few instances in which the mouths were affected, as in cattle. In dairy-cows the teats became affected with pustules and ulcers at the same time as the mouth, the udders subsequently became inflamed and tumefied; and abscesses were formed, terminating frequently in a total loss of milk, and, in less severe cases, in a diminution of quantity. The pregnant and in-calf cows and barren cows were less violently affected, but cows having recently calved suffered most, more especially in the udders, from the formation of tumours and milk abscesses, constituting the disease commonly called garget; abscesses and ulcers also were found in various parts of the limbs and body, especially the points bearing the animal's weight when lying down. At this stage of the disease it was often attended with so much fever and prostration of strength and constitutional debility, that the animal was incapable of rising or changing its position, which caused extensive ulcers, abscesses, and frequently death from irritation and exhaustion. A few cases of second attacks are reported to have occurred, and even third attacks are mentioned; but these are exceptions. There are reports of some having been herded with infected animals and entirely escaping, and some that had gone through the disease, and, although re-exposed in diseased herds, had no renewal. In one report vaccine inoculation from a child is said to have lessened the severity of the disease. Low condition is also said to have diminished its virulence. In the few that had second attacks the disease in some is stated to have been in a severer, and in others in its usual form. (Preventive treatment has been resorted to successfully, as reported in some cases, but failed in others, such as smearing the noses, feet, backs, loins, and horns at intervals with tar. Others have applied it about the premises.) Abortion has seldom occurred, nor has the produce of any stock been born diseased, although the mothers were labouring under it during parturition. Some newly-born animals became sickly in two or three days after birth, and died apparently from constitutional disturbance. Others, in which the usual symptoms became manifest, were cut off

within a week. It is stated to have appeared in the feet of sucking pigs only. Upon the subsidence of the disease many cattle were attacked with cutaneous eruptions, which usually yielded to the remedies employed in ordinary cases of mange. In the few post-mortem examinations that were made, a diseased state of some, and in others of all, the vital organs appeared, and marked inflammatory action had been general throughout the system. The epidemic disappeared in some farms and dairies in about a month, and in others extended to six months. The cattle that have suffered from the disease in the country are estimated to have been reduced in value five per cent., which is much below the London estimate, and dairy-cows having newly calved are calculated to have lost thirty per cent. of their original value.¹

In a lecture on the 'Diseases of Cattle,' delivered by Mr. Cherry at the London Farmers' Club, in October, 1847, there is reference made to this period; but the lecturer strangely confounded the horse-influenza and contagious pleuropneumonia with the vesicular or ekzematous epizooty. Speaking perhaps of this malady, he makes the following remarks: 'In 1840 the disease broke out amongst *horses* and *sheep* simultaneously. I speak now of my own immediate district. But for a considerable period before this I had heard that rumours were rife that there was a disease of an epidemic character prevailing in the west of England, more particularly in the low parts of Somersetshire and on the rich lands about Bridgewater. Thence it gradually spread through the upper part of Somersetshire, until, in the month of July, it was just on the upper border of the county of Wilts, where it jumped, about a fortnight afterwards, into the valley of the Test, then towards Basingstoke, and when it had reached that point it seemed to have acquired great force, and it spread rapidly throughout the entire kingdom. All these points are almost in a direct line west and east. But there were several lines parallel, as it were, to each other; and while the disease was advancing in the same direction, there was at the same time a small spreading out laterally, until, in the upper part of

¹ *W. Sewell. Journal of the Royal Agricultural Society of England. 1841.*

Hampshire, the lines seemed to coalesce. In a few months the disease was, as I have stated, rife from one end of the kingdom to the other; cattle, sheep, and horses being all attacked. It even affected animals living in the state of *feræ naturæ*. It was very peculiar in its course at that period, and, in fact, it is so at the present time. It would take one part only of a stable. There was one stall with a horse affected, another in which the animal was not in the least affected. It would take a farm in the same manner; and I have even known it take part of a flock. Swine were affected in the same way, and even poultry did not escape. There were some circumstances connected with it which are peculiarly worthy of notice. On investigation I found an entire change in the system of an animal affected. Instead of finding blood which was full, rich, and sufficient to carry on the functions of life, I found watery blood.¹

But these general statements are not much to our purpose in tracing the progress or character of the affection in the several counties and districts, especially as the somewhat ample accounts from veterinary surgeons throughout the kingdom, thanks to the efforts of Mr. Youatt, furnish us with materials for the compilation of a tolerable description. We will take these reports in the order in which they detail the advent of the respective local outbreaks.

NORTHAMPTONSHIRE.—Messrs. J. and G. Hawthorn, of Kettering, report: ‘We are situated in the midland part of England. The country round has a gentle undulating surface, intersected by small rivulets. The nearest point of the river Nen is eight miles distant. The neighbourhood is studded here and there with woods, and on the north-east with an extensive tract of woodland forest. The soil is, for the most part, light and dry, with a considerable mixture of black heavy land; but, on the whole, well-drained. It is more of an arable than grazing district. The previous feeding for some months had been in the straw-yard and the stall, and the usual quantity of cattle in the fields were foddered with hay when necessary.

¹ The Veterinarian, vol. xx. p. 644.

'The epidemic first made its appearance in March, 1839. The weather had been rather rainy. The month of March had its usual character and proportion of storms and easterly winds. February gave us some fine weather and less wet, on the whole, than usual; but all the other winter months, and the whole of 1839, were remarkable for the extraordinary quantity of rain which fell. The disease first appeared among some fresh-bought lots of north-country cows, but we cannot tell whether they had caught it on their journey. Afterwards the cattle which lay near to roads were most liable to infection. The above cows had come from large fairs. The next two or three lots were either home-bred or had been on the farm for many months. There were some infected cattle about two miles from the first of these lots, up the same valley, and the wind was in the quarter to carry any miasma to those below them. At the same time, the owner of those to which we are referring had twenty more bullocks in a straw-yard in the same direction, about a mile off, and they escaped. . . . It frequently occurred afterwards, and there is reason to think, in many cases, that servants communicated the disease; as we also believe that the shepherds who attended diseased cattle communicated it to their sheep. Very early, however, after the epidemic appeared, shepherds were forbidden to attend cattle, and persons who did attend them were kept from healthy cattle as much as possible. We cannot doubt about the disease being both infectious and contagious. Several calves from diseased cows have had the disease the first, or second, or third day after their birth; some few have died, but most recovered. Generally speaking no cattle escaped that lay together, and those that were in a neighbouring yard or close were almost invariably affected. At different times during the last year, when the disease had abated and almost disappeared, it was sure to break out again after any of our periodical fairs in the country round. In fact, we expected it beforehand, especially if they were large fairs. In several cases the disease first appeared after a cow had been sent to the bull, where the disease was, or had recently been. That it is contagious is, we

think, also proved by its being easily communicated by inoculation either in the dewlap or merely by applying diseased saliva to the lips of the healthy animal. In one case a diseased cow went into a farm-yard for half an hour, and then was turned into the field. There were no other cows in the yard. In a day or two the pigs were all diseased. In one instance a farrier gave a cow a drench with a horn with which he had just been drenching diseased beasts; the cow and all the other cattle on the farm very soon had the disease. . . . Staring of the coat, looking thin, saliva hanging about the mouth in bladders, or hanging from the lips nearly to the ground; smacking of the jaws together with a peculiar noise; stiffness, lameness, shaking first one foot and then the other, and also costiveness, were the most common symptoms. In a great majority of cases the mouth was first affected—now and then the feet. The pulse was quickened, sometimes full and hard, and sometimes depressed, or not altered in slight cases. Blisters were on the tongue and membrane lining the lips, followed by sloughing. There was ulceration and sloughing of the membrane connecting the claws, and ulceration and separation of the hoof at the coronet and heels, accompanied by a most offensive smell both from the mouth and feet; also inability to graze or to eat loose food in bad cases,' etc. 'In some few cases there was ulceration of the base of the horns similar to the coronet, and ulceration of the alæ of the nose.' 'Nearly all the cattle (all in many or most parishes) in the neighbourhood have been affected. We cannot tell the number we have attended and prescribed for; we believe it would be considerably under-rated at fifteen hundred. We think we have not been without some patients above one or two weeks since March last. We do not imagine that one has died fairly and exclusively from the epidemic, and that had been well treated from the first. We have known a few die from starvation, caused by gross neglect.' 'Some few have had abscesses formed in the knees, humeral muscles, hocks, and among the flexor tendons; but for the most part, if not wholly, these have been neglected cases. There are more dying now (January, 1841) in this county than at any other time since

the disease first appeared ; but they are newly-bought beasts, that travelled day after day in the late frost, their feet cut and worn to the bone by the sharp and hard roads ; their constitutions undermined by pain, want of food and rest ; and their muscles inflamed by extraordinary exertion to save their feet. Many of these are distressing cases. In several we have had to take out the toes of the coffin-bones, and in others there were large effusions of thin, brown, foetid pus under the skin over the sacrum, pelvis, and thighs ; and when these tumours are opened, large pieces of mortified muscles, the size of a man's hand, have been extracted. Of course, these have been murdered by travelling when ill. . . . The milk is generally diminished in quantity and quality, frequently ropy, and like curds and whey. Too often the secretion is of a dark brown colour and foetid ; and the udders of many cows will be permanently injured. We have not found the age of the animal, except in the very young calf, the sucking-calf, influence the complaint. We have not seen a case of the same animal having the disease twice. . . . A gentleman, upon whose intelligence and judgment we can rely, told us he had a cow which had the disease twice. . . . We have been told by a clerical gentleman that this disease has always been known in the East Indies, and that it is looked for regularly after the periodical rains.¹

BUCKINGHAMSHIRE.—Mr. Youatt writes: 'In the latter part of 1839 a disease, or rather a combination of diseases, began to appear among cattle in various parts of the United Kingdom. Even in its earliest stage it was composed of maladies whose seat was far distant from each other, whose symptoms were altogether unlike, and yet that were, sooner or later, inseparable and fatal companions. The mouth and the feet, the organs of assimilation and of respiration, so different in their character and in their management, were equally involved.

'In May, 1839, according to Mr. Beeson, of Amersham, the disease began to be prevalent in his neighbourhood, and, some months before, several of the cattle had been somewhat

¹ *The Veterinarian*, vol. xiv. p. 184.

tender-footed and tender-mouthed. Mr. Wardle, of East Sheen, informed me that in May and June of the same year an epidemic affecting both the feet and the mouth existed in his neighbourhood, but presently disappeared. In the months of August and September in the same year it broke out again, and continued to appear at uncertain intervals until the summer of 1840, when it became prevalent in almost every part of the country.¹

Mr. Lepper writes from Aylesbury as follows: 'The soil is various, but principally a rich mould of a dark colour on a subsoil of stiff clay, particularly throughout the lower part of the vale, which abounds with exceedingly rich pasture, probably surpassed by none in this our great agricultural county. In other parts, where the soil is less rich, the subsoil is hard sandstone, and in some places coarse gravel. Near the Chiltern Hills the soil is less productive, being of a kind of chalky clay, below which chalk and chalkstone abound. The cows, during their time of lactescence, are liberally supplied with hay twice in the day throughout the winter months. They are turned to pasture both day and night the whole year, and are put into cow-houses or sheds morning and evening, for the purpose of being milked. When they are allowed hay at the season above stated, they remain long enough—from two to three hours—to fill themselves. A great number of oxen are fattened by grass only, and sent to Smithfield about Michaelmas; those intended for Christmas are taken about this time (Michaelmas) into houses, and profusely fed on the best-selected hay and oil-cake.

'The first case that came under my own observation was in the month of February, 1840. I heard of one farmer having the disease among his cows as far back as November, 1839. I did not see them, and, of course, cannot answer for the accuracy of the report. The weather had been exceedingly wet from July, 1839, to March, 1840, and the land so completely sodden, that it was with great difficulty the beasts could walk on it in many situations. Mr. Tomlin, of Rousham, was the proprietor of thirty-two head of cattle (twenty-eight

¹ The Veterinarian, vol. xv. p. 444.

killing cows, two stirks, and two bulls), all of which had the epizootic disease. I first saw them on the 16th of February, 1840. One had died on the 15th; another I directed to be immediately killed on account of the miserable state in which it was; four died afterwards, and many very slowly recovered. Mr. Tomlin states as his opinion, that he brought the disease to his own cows by purchasing two heifers about ten days previous to its outbreak; but this is very doubtful, as neither of those heifers were, apparently, affected by the disease until a day or two after his cows showed symptoms of it. A Mr. Cox, of Scot's Grove, who, perhaps, has had more cases of disease than anyone in this county, affirms that he introduced the complaint among his cattle by purchasing some barren cows with the disease on them. About forty had the disease at the time I saw them, which was on the 25th of February last.

'I am of opinion that it is a contagious disease, although it may be difficult for me to give the why and the wherefore. I have attended cattle affected with the disease, the property of fifty-two persons, out of which number about fifteen or twenty positively affirm that they brought the disease to their stock by purchasing heifers, many of which were bought at the fairs at Leighton Buzzard, in Bedfordshire, and at Winslow, in Buckinghamshire. Nearly the whole of the beasts that were purchased at Bristol fair, *in the month of April last*, either came home with the disease on them, or fell ill with it in a very few days after their being safe in the possession of their new owners. There are many instances on record which, I think, go a great way to prove that it is contagious. . . .

'*Symptoms.*—A watery eye; slight erection of the hair; horns and feet alternately hot and cold (the latter most frequent); pulse a little accelerated, about 70 or 75; continual shifting of the limbs and shaking of the feet, as though attempting to rid them of some foreign body. In the course of a few hours the cutis is raised in the form of vesicles at the point and dorsum of the tongue; on the gum of the upper jaw, at that part which approximates to the incisors of the lower jaw; around the alæ of the nose, and at the point; on the

sides and at the puncta of the papillæ, raising the whole of that portion of dense cutis which forms the connecting medium. There is a constant flow of saliva, inability to feed, and disinclination to rise. The secretion of the milk is diminished, and in some cases entirely suspended. The bowels variously affected : in some cases they are relaxed, in others constipated, and in many they are in their natural state, the fæces being occasionally of rather a darker colour. The blisters soon burst, and sloughing commences, *generally, in the mouth first*, which is completed on the second or third day of its attack. On or about the third day the parts are less tender; the animal begins feeding, particularly if supplied with soft food. Vesicles appear on the teats of those animals only which are giving milk, or very near their period of gestation; and, in consequence of the extreme irritation kept up by the hand of the milker, very painful and troublesome ulcers are produced, particularly at the punctures, where the consequent inflammation and thickening entirely excludes the possibility of getting away the milk, and *mammitis* or *garget* is the result, with the final loss of one or more quarters of the mammæ, and in some instances the loss of the cow. Fortunately, the latter is not a very common termination. . . . I find, if the mouth is extremely affected, the feet suffer much less, and the animal recovers more quickly, every untoward appearance passing off in about twelve or fourteen days. If the mouth is slightly affected, the feet are generally much worse, and in numerous instances the whole of the horny sole separates; consequently the lameness continues a very considerable time, until a new sole forms, when the use of the drawing-knife is required for the purpose of removing any remains of sole. In more unfavourable cases, inflammation extends to the deeper-seated cellular tissue, and considerable sloughing takes place between and in front of the hoofs, and occasionally the ligaments are not exempt. When this is the case, a fever of a typhoid character, and to an alarming extent, commences, and numerous abscesses—purulent abscesses—form about the joints, particularly the knees, stifle, and hip-joints; and finally, death closes the scene.

‘I have attended nine hundred patients, out of which fourteen have been lost. . . . The loss I imagine to be less than two per cent. As the disease progressed, it (like all other epidemic or epizootic diseases) lost, to a certain extent, its severe characters, particularly in the warm and dry summer and autumn season, at which time many hundreds recovered with little or no treatment. Since, however, the wet season commenced, it has been a little more severe. Lameness is more frequent and troublesome in wet weather than in dry, in consequence of dirt insinuating itself between the old separating sole and the newly-formed one. . . . The disease was not influenced either by age, sex, or condition. Anything which tended to debilitate the system, such as crowding them in ill-ventilated situations, long drifts, standing in fairs or markets, etc., appeared to predispose them more readily to take on the disease.’¹

SUFFOLK.—Mr. Rush, of Bungay, writes in January, 1840: ‘The peculiar epizooty which has been and is now raging amongst neat-stock and pigs in various parts of England, has not made its appearance within the sphere of practice in which I am engaged; but my attention was called, in November, to some diseased bullocks and pigs at Mr. Thomas Burton’s, Langley Grange; and as lately as Friday, January 3rd, to some bullocks the property of Mr. W. Jex, Toft, both in Norfolk.

‘On November 7th, 1839, Mr. Thomas Burton, of Langley Grange, observed two fresh Devon bullocks (which had been worked on the farm) froth at the mouth, and appear dull and off their feed. At first he thought they were choked, but as they were not blown he was not alarmed. On the 8th they continually kept snatching up their hind-legs by turns, did not feed, dribbled and frothed more at the mouth, and frequently smacked their lips together, making a slight noise, as if you gently clapped the fingers of one hand on the hollow palm of the other. Not feeling satisfied as to the cause of these symptoms, and the beasts looking thin, Mr. Burton sent for Mr. D. Hunting, of Loddon, who usually attends his sick

¹ *H. Lepper.* The Veterinarian, vol. xiv. p. 82.

stock. Having never seen similar cases, Mr. Hunting very candidly expressed himself somewhat at a loss, and, as several more bullocks had become affected, requested that Mr. John Wells, V.S., Norwich, and Mr. R. Duffield, V.S., Bungay, should also be consulted. These gentlemen found the inferior portion of the dorsum of the tongue and the membrane lining the anterior lip and gums vesiculated in several places. Some of the vesicles, being already broken, presented a healthy excoriated (not ulcerated) surface. The discharge from the vesicles was of a thin, serous character, and, in the beasts first affected, very foetid; this arose, probably, from neglect. Their feet were not much noticed at first, although they were evidently lame. Mr. Wells thought at first that the beasts were affected with blain (glossanthrax); but Mr. Duffield imagined it might arise from eating the tops of mildewed turnips. . . . After the third day the vesicles ceased to form about the mouth, lips, etc., but the pain in the feet became intolerable; the beasts were always lying down. On examination, vesicles and excoriated patches were found between the heels and on the cuticle of the coronet. . . . The pigs which ate the refuse from Mr. Burton's bullocks were observed to limp, smack their lips, and snatch up their hind-legs in a similar manner to the bullocks. The mouths and feet were quite as much excoriated; and they were removed into a separate yard, where they were supplied with clean wheat-straw, and fed with pollard, milk-swill, etc. Of fifteen bullocks belonging to Sir W. Beauchamp Proctor (which were fed in the park, a corner of which adjoins Mr. Burton's yards), four only were affected similar to Mr. Burton's. . . . There were twenty-seven short-horn and Devon bullocks attacked at Mr. Burton's, commencing November 8th and subsiding about the 22nd of the same month; from judicious management and nursing, these bullocks suffered very little indeed from the epizooty.

'On January 3rd, 1840, I saw, with Mr. Hunting, twelve bullocks which had for some time been affected at Mr. Jex's, Toft. The beasts were very thin, and food had not been supplied them artificially when they could not eat. The feet had not been dressed, though the animals were lame. . . . I

have heard casually that Mr. Hinds, a practitioner at Halvergate, has had a great many cases under his care, and that some have died. Mr. Walne, who collects for Smithfield from Norfolk, informed me on the 4th January that Mr. Richard Reed, of Freethorpe, Norfolk, had bullocks affected with sore mouths and feet, constipation of the bowels, and that the fæces were black and very fœtid. From this description I suppose that the epizoöty is raging there. Mr. W. observed that it interfered very much with the usual readiness of the beasts for market.’¹

Mr. Simonds, also writing from Bungay about the same period, says: ‘On Wednesday last I accidentally met Mr. Hinds, of Beccles, who kindly invited me to see some beasts. . . . The bullocks and cows of Mr. Matthews, of Ringsfield, amounting to ten, have, with some pigs, been likewise affected. . . . Mr. Hind’s son, of Halvergate, has attended upwards of three hundred in that neighbourhood, pigs and sheep. His apprentice, they say, was ill for four or five days with a similar affection, viz., the vesicles on the tongue, fever, etc.’²

SUSSEX.—‘Mr. Habin states that, on the 25th of February, 1840, a lot of Devonshire cattle were exposed for sale in Chichester market, the greater number of which were labouring under the disease.’³

KENT.—Mr. Plomley, Maidstone, says that on the 18th of February, it showed itself in a dairy of twenty cows, all of which had been previously in good condition, and fed on hay and grains. He thus writes: ‘The symptoms are trembling, staring of the coat, dulness of and discharge from the eyes, loss of inclination to food and rumination, febrile pulse, breathing slightly hurried, bowels constipated, fæces of a dark colour, nose dry, breath offensive, the mouth generally affected before the feet.’⁴

STAFFORDSHIRE.—Mr. T. Mayer, Newcastle-under-Lyne, writes to a public paper under date January 25th, 1841: ‘The disease is one *sui generis*, and, as far as my reading and

¹ Abstract of the Proceedings of the Veterinary Medical Association, p. 133.

² Ibid. p. 140.

³ The Veterinarian, vol. xv. p. 445.

⁴ Ibid.

observation go, has never prevailed in this kingdom before ; therefore, to style it the murrain, or blain, is highly incorrect, and carries very erroneous ideas along with it, both as to its nature and treatment. I have a vague idea that it was first perceived in the county of Norfolk. . . . When we reflect upon the series of unprecedented wet seasons we have experienced up to 1840, the consequent badness of fodder and grain, the saturated state of the earth with moisture, and the consequent decomposition of vegetable matter exhaling its poisonous miasma into the circumambient air, we cannot feel surprised that disease and death, in every varied form, should be evolved in the poor fragile frame of the animal creation. It is of a highly contagious nature ; so much so, that it was no uncommon occurrence to witness a herd of from thirty to sixty head of cattle falling prostrate before its baneful influence in the short space of a fortnight. Its infectious properties extend to all the cloven-footed and ruminating tribe, but not to the human subject, nor the horse and dog. On one occasion a poor man's cow came to my establishment labouring under the disease, and was very inadvertently put into my cow-house to have its feet properly examined and pared out ; although my own cow was out in the field at the time, and only tied up at night, yet the disease developed itself in four or five days by tenderness in her feet, followed by the affection of the mouth, and accompanied by the general febrile symptoms. A very erroneous idea has gone abroad, that pigs have taken the disease from partaking of the milk of the infected cows ; but they have simply become affected upon the same principle as sheep, by having been allowed to come in contact with them, or to follow after them in the pastures or straw-yards where they have been turned out. Pigs and calves, as a matter of experiment, have been fed with the milk of infected animals, but kept out of the sphere of the contagion, and have not been the least affected. My own family, including a child twelve months old, partook of the milk and cream of my own infected animal (being old, milched, and near calving, we gathered no butter) without experiencing any injurious effects. . It is only where particular

cows' udders are labouring under an attack of inflammation, or what is called "gargeted," that the milk is required to be flung away. Wherever this disease has assumed its epidemic form (as in our district) like the cholera, it appears uninfluenced in its freaks by either weather, locality, soil, pasture, or previous feeding—affecting the poor as well as the well-conditioned animal, the old as well as the young, without distinction; but I consider those cows which were the best milkers, and in full milking at the time of the attack, as experiencing it more severely than others. It made its first appearance in the northern parts of Staffordshire, near Uttoxeter, at a few isolated farms, during the spring of last year, in consequence of some diseased cattle, purchased at Uttoxeter fair, and introduced into their respective herds, to which localities it was confined; nor was it until last autumn that it assumed its epidemic form amongst us, when it involved in its attacks both sheep and pigs; at the same time an epidemic fever, of a virulent and highly infectious nature, broke out amongst the horses of the district, seldom sparing a single horse in any establishment, however numerous, from its attack. . . . It had no connection with other diseases, and where the animals passed through it moderately, and were properly treated, their condition was not much affected. In those instances where the feet suffered much, the condition was rapidly lost, and long in being recovered again. In one instance which came under our eye, the animal had the disease twice over; but we consider it an exception to a general law in nature, that peculiar contagious fevers cannot affect the system twice over; however, it requires a more extended series of observations than I can furnish to set this point right. There are many strong facts which fully bear out the opinion, that healthy animals traversing the roads already tainted by infectious animals having travelled along them, have taken the disease, on the same principle as a sheep-walk infected with the foot-rot will communicate the disease to a healthy flock turned out upon the same beat. This points out how cautious noblemen and gentlemen possessing deer in their parks should be in not allowing infected herds of

cattle, or flocks of sheep, to pass along them. I consider, too, that it is capable of being conveyed by parties in attendance on diseased stock to healthy herds.' The symptoms enumerated do not present any unusual features, but this practitioner adds: 'In some instances the mammary glands were attacked with violent inflammation, which would either end in mortification, or extensive formations of matter or pus amongst the interstices of the muscles. Fortunately these extreme cases were rare, and it was evident that the disease, as it prevails among us, had assumed a much milder type than during its early career. The malady consists in a highly contagious inflammatory fever, possessing an erysipelatory type, consequently bearing bleeding ill, and affecting particularly the mucous and secreting tissues. In its regular form it runs its course in a fortnight, the animal becoming again convalescent, and fit to turn out gradually in the day-time, if fine, at the end of three weeks. . . . The pigs were affected similarly to the cattle, but ran through the disease more mildly, although in many instances their hoofs came off. . . . At the same period when the epidemic pervaded the cattle of this district, it gradually developed itself amongst the flocks of sheep, to the serious cost and disappointment of the farmer. It was a singular circumstance that, at the time when it was raging as an epidemic down in Cheshire and up in Derbyshire, bordering on the northern part of Staffordshire, we had not a solitary case in the neighbourhood, and had a sanitary *cordon* been drawn around us, it would not have been more effectually shut out; nor was it until some of those inexplicable, mysterious, and inscrutable changes occurred in our atmosphere as autumn approached (and which set at defiance all the resources of science for detection and a satisfactory explanation), that the disease assumed its epidemic character. These atmospheric influences operate powerfully upon the animal economy, tending to change the healthy action of the system, and destroy its delicately and wonderfully balanced operations, and thus predispose the body to take on disease. The symptoms of the disease in sheep correspond exactly with those in the cow and pigs; but they suffered more severely

in their feet than the pigs, and equally as much as the cattle, the hoofs coming off more extensively than in either of the other two. The disease pursued equally the same course as in cattle, commencing in their feet.¹

HUNTINGDONSHIRE.—Mr. Dickens, of Kimbolton, reports : ‘The first appearance in my neighbourhood was in February, 1840. The disease kept raging with us until the beginning of December. A little while after that I had not a case upon my list. I have had from a thousand to fourteen hundred patients. I have found it to attack our cattle more or less in all situations, whether tied up, or in meadows or upland. My opinion is that it is decidedly contagious. As to infection, I am yet doubtful. I have observed that store beasts in good heart bore it best ; very poor stock bore it badly. Old cows suffered much ; but the greatest danger existed with cows in full milk, or down calving. . . . There is an opinion amongst many farmers, backed by some veterinary surgeons and medical men, that the milk from the diseased cow was the cause of the disease in pigs. I do not believe that it was thus to be conveyed. I know an instance of a lot of pigs that were bought purposely to give the diseased milk to. They were kept entirely upon it for six weeks, and not one suffered. No ! They are affected by some external agent. I saw the *fowls* bad with it in one yard—and some died.’²

¹ The Mark Lane Express, January 25th and February 1st, 1841. Speculation was busy of course at this time as to the cause of the epizooty, and amongst the many curious reasons put forward was that of Dr. Whitlaw, at the second anniversary meeting of the Royal Agricultural Society of England in 1840. In the ‘Farmer’s Magazine’ for that year it is reported that ‘Dr. Whitlaw expressed his opinion on the cause of the late epidemic amongst cattle, and referred to the writings of Linnæus for corroboration of his views. He declared his full persuasion of the deleterious nature of the buttercups and other species of ranunculus in pastures to the cattle feeding on them, attributing to the poisonous properties of these plants not only the recent epidemic, but all former attacks of the kind, rendering the animals poor and unwholesome as food. He would, therefore, recommend to the Society and the public to try the experiment of *ploughing up the old pastures, saturated as they were already with the poisonous exudations of deleterious weeds*. He would also refer to the evil effects of bringing animals to such a degree of obesity that their fat might be literally termed neither more nor less than the “essential oil of dung.”’

² The Veterinarian, vol. xiv. p. 136.

WORCESTERSHIRE.—Mr. Tombs, Pershore, reports :—‘ February and March, 1840 : Two barren heifers, bought at Tewkesbury fair (Gloucestershire), were put in a yard with twenty-one milch-cows. They were labouring under this malady, and gave it to the others, and these spread the disease to one bull and five feeding cows tied up in stalls adjoining the yard. Three sucking calves also had the disease, and twenty pigs in the yard. All recovered. When attacked the cows were in a yard, living on hay and straw ; the weather cold and dry ; the situation three miles south of this town. This was the first appearance of the complaint in this neighbourhood. March : Nine milch-cows and five fat cows, stationed half a mile apart, were attacked in the same village as the previous ones. The pigs in the same yard escaped. These cows never had communication with diseased animals, not even through the medium of the men who tended upon them. All got well. May : Four heifers were brought home in a diseased state from Worcester fair. They had been driven on the road with other diseased animals, and fed on hay before the attack. The pigs escaped. June : Six heifers got into a field where there were several others sick with the epidemic, and contracted the disease. They gave it to one bull, seventeen milch-cows, six weaning calves, and some sheep. They were living entirely on grass. The situation seven miles west of this town, and the weather warm. The milk thrown away. All recovered. The pigs escaped. August : One milking cow bought of a dealer who had in his possession other cows ill with the same complaint, gave it to thirteen other milking cows. From these thirty-four feeding cows and heifers contracted the disease ; all living on grass at the time of the attack. The sheep in the same fields were not infected. All recovered. December : Seven young oxen, eleven cows in calf, living on barley straw, were attacked. They had never been near any diseased animals, nor were the men who fed them. The weather was cold and frosty. All recovered. January, 1841 : Two cows in an open field, living on hay and grass, were affected with this complaint. They were housed, and communicated it to five milking cows tied

up in a shed some distance from them. The same cowherd fed them all. All got well. All these cases were treated by me, with many more, perhaps altogether very nearly two hundred oxen, cows, and calves, not including pigs or sheep. The disease was very prevalent in this neighbourhood in December last, among oxen, cows, pigs, and sheep; and in addition to my patients more than a hundred cows had it. . . . As to the soil and climate, I need only say that the disease made its appearance all around this town, within a circuit of seven miles, part of which is in the vale of Evesham. Some were attacked in the grass fields, others in stalls, and many in the straw-yards. In some localities the soil was rich and sandy, in others there was a red loamy soil. Some were on a rich and others on a cold clay. . . . A healthy ox travelled along a road where diseased cows had previously walked. In three days after the same disease had firm hold of him. . . . I am decidedly of opinion that this disease is caused by atmospheric agency, and propagated by contagion. Calves sucking cows that had sore nipples when under the influence of this malady frequently had the disease, whereas others sucking healthy teats escaped. . . . If the disease is communicated to the human subject or animals through the medium of the milk, I think that it is where the teats are ulcerated. I omitted to mention that vesicles and abrasions often form on the nipples of milch-cows: the matter drops from the sores into the milk-pail, which matter may produce the disease under consideration in the human subject and other animals by inoculation. . . . Neither condition nor age influence the progress of the disease. . . . I can say nothing about the post-mortem appearances, not having seen an animal affected with this complaint after death. I have been informed, from good authority, that pigs, when killed and eaten, as all fat ones are as soon as they are perceived to have this complaint—I certainly could not relish the bacon—have patches of inflammation on the skin of the belly, and on the outer coat of the stomach and intestines; likewise on the villous coats of each.’¹

¹ The Veterinarian, vol. xiv. p. 127.

GLOUCESTERSHIRE.—The epizooty also appeared here in the month of February, 1840.¹ Mr. Wyett, of Painswick, in 1843, thought that the epizooty might have been caused by mildewed turnips or grass, smutty straw, or mouldy hay. 'We have the general prevalence during the last two years, in many parts of the country, of mildew in its several varieties, with the large quantity of damaged hay, straw, and grain—facts to be traced to the extraordinarily wet summer of 1839. . . . A very respectable and intelligent surgeon, who attends my own family, informs me (indeed, his case has come under my own actual observation) that during last November (1842) he had examined a number of cattle labouring under the epidemic, particularly a horse, whose mouth he opened; he did not, however, dissect any. On November 26th he saw some very bad cases, though he did not on that day touch them. December 1st, he was himself attacked by fever and general constitutional derangement. On the 4th, inflammation at the root of the nails, both of the fingers and toes, came on, which extended to the joints, especially of the fingers. About three or four days after, suppuration ensued, and he lost two finger-nails, one on each hand, preserving the rest with great difficulty. His own impression is that it was the same disease which is now so general among cattle.'

To this Youatt adds: 'I have now the nail of my left forefinger sloughing off from a sore coming into contact with the diseased mouth of a beast. There was considerable irritative fever accompanying the case.'²

CHESHIRE.—'An extraordinary account is given by Mr. Holford, of Northwich. He says that at the beginning of 1840 a cattle-dealer brought several valuable cows suitable for the dairy from some of the adjoining counties. He brought them home, not suspecting in the least that anything had been the matter with them. In a day or two afterwards he took them to a fair seven miles from Northwich, and, from the superior appearance of these cows, customers were soon found for the lot. Of necessity they were driven to various parts of the country; but, strange to say, the stock of all the

¹ The Veterinarian, vol. xv. p. 445.

² Ibid.

parties that bought cattle out of the drover's lot immediately, or within a day or two, began to have the epidemic. In one instance it was considered too far to drive the new purchase home, and the owner ordered her to stop for the night at his brother-in-law's farm. The consequence was, that this gentleman's stock was, in a few days, suffering from the malady. The disease, for a considerable length of time, was confined to the parties who purchased of the drover ; but by degrees it spread fearfully around, and intermediate farms, on which none of these cattle had been received, seemingly became empoisoned, and all the cattle on them became diseased.'¹

LINCOLNSHIRE.—Mr. T. Darby, Louth, writing on the 31st of January, 1841, reports as follows : ' The disease still exists in this neighbourhood. As I am situated, I have the marshes and sea to the east, and the Lincolnshire Wolds west and south. The soil and pasture are various. Of the first beasts that I attended, I know nothing of their previous feeding. The earliest appearance of the epidemic in this neighbourhood was about the middle of last April. The first lot of patients that I attended was twelve cows belonging to W. Loft, Esq., of Grainthorpe, that had been bought of a jobber a few days before at Caistor fair. They appeared to be quite well until about two days after they got to their new home ; they then began to foam at the mouth, and I was sent for, the messenger saying that he was afraid they were poisoned. They very soon got over the complaint, and the weather at this time was very warm. They had been mixed with other beasts belonging to Mr. Lofts, and the same man who had attended the sick ones also took care of the others, some of which very soon showed symptoms of infection. Two or three days after this I was sent for by a farmer on the Wolds to inspect his milch-cows, that, according to the servants' account, had got poison. There were nine of them. . . . My opinion is that this malady is infectious. I have seen many instances in which diseased beasts have been driven past healthy ones, and healthy ones travel on the same road after diseased ones, and in both cases they have so soon

¹ The Veterinarian, vol. xv.

taken the disease, that I can have no doubt about the infectious nature of the malady. I have also seen a lot of diseased beasts in a field, with a lot of healthy ones in the adjoining pasture, and the healthy have very quickly become diseased. On the other hand, in a few instances, I have known them altogether resist the disease after being regularly lodged with the sick. In general, however, I have no doubt that the healthy take the disease from the sick.

‘In the beasts that I have attended, it has generally commenced by foaming at the mouth ; the eyes, in a great many cases, partially closed ; the hair erect, with stiffness in the hind-quarters ; disinclination to move ; the back bowed up ; general costiveness ; great prostration of strength, some of them scarcely capable of walking. The feet are also diseased from an early period of the attack. . . . The general duration of the disease has been from six to ten days. I have had two thousand eight hundred beasts and about seven thousand sheep, and the result has been a very favourable one, not losing more than six beasts, with very few sheep indeed ; in fact, the disease, generally speaking, has assumed a mild form in this neighbourhood. I cannot ascertain the number of diseased animals in the country around, but I do not think the general result has been very serious. Great alteration took place in the milk of some ; in others there was scarcely any. In some it was quite putrid ; others have yielded nothing but a whey-like fluid, and in a few it has been mixed with blood.’¹

Mr. Youatt has collected a large number of reports from other parts of this county, where the malady prevailed from its appearance there in April, 1840, till November, 1841 :

‘Mr. Hutton, of Gate Barton, near Gainsborough, says that the epidemic of 1841 prevailed in all the farms adjoining to his, and among some yearling heifers, and spread through all his cattle excepting four, and nearly all his sheep and pigs. It first appeared during the fine weather in October. A communication probably took place between his cattle and some diseased ones, for a road very much frequented by drovers was close by the field containing his sheep. This is the only

¹ The Veterinarian, vol. xiv. p. 131.

cause to which he can trace the disease, for his cattle had never been off his farm. They were yearling heifers, in good condition for breeding. These were first attacked, and the disease afterwards gradually spread to all the others. They were all affected in the mouth, and more than half of them in the foot. In sheep and pigs it was most prevalent in the feet; in cattle, in the mouth. . . . Out of seventy beasts of all ages, he lost a yearling steer that was much affected in the head and eyes, and a sucking calf about ten days old. Out of two hundred ewes he lost four, and out of two hundred lamb-hogs five; out of two hundred ram-hogs, none; out of a litter of eight pigs seven weeks old, four; and out of twelve older pigs, nine. The milk invariably diminished for a time. In some it ceased altogether, but in the greater part it returned. Pregnant females were not exempt from the disease; there was no case of abortion. One calf exhibited the disease at a week old, and died in three days. The sheep were generally left very weak, and particularly the lamb-hogs. Among the cattle the milch-cows suffered most, and the feeding bullocks the least. The cattle got clear of it about Christmas, and the sheep could not be considered as recovered for a considerable period afterwards.

‘Mr. H. Grantham, of Glandford Bridge, states that when the epidemic first appeared on his farm, only one ox was affected by it, in the first week in September. There were three other beasts in the same field, none of which had it. The disease returned in the beginning of November, and every beast, with the exception of one, was affected. They were then taken into a straw-yard, and all the pigs caught the distemper. Three of them died. When the disease appeared the second time, the cows had been driven into the village to milk, and might have met with other cattle. They first began to slaver; then the tongue swelled; and the whole of the mouth, and frequently the throat, became so sore that a portion of the skin came off. None of his cattle had sore feet, but the sheep were exceedingly bad in their feet, and continued to be so. None of them died. Nine of the milch-cows had the distemper, and a great many of the cattle belonging

to the cottagers. A calf that sucked an infected cow had the disease.

‘Mr. J. West, of Melton Ross, near Glandford Bridge, had his cattle first attacked after they came into the fold in November, and it afterwards extended to every other kind of stock. He bought a hundred head of horned cattle at Caistor Michaelmas fair, which had been travelling for a fortnight before, and had no symptoms of the epidemic until a month afterwards. They had been kept on straw for a fortnight prior to the attack. Both cattle and sheep were affected. The horned cattle were not in the least diseased in the feet, but some of the sheep were in worse condition than when they were placed on turnips in Michaelmas. None of them have been affected a second time. The udders of the cows were soon diseased, and the milk could not be used for a month. The horned cattle were all spotted over like leopards after the complaint left them. They were not much reduced, but the sheep suffered greatly in their feet. Mr. West says: “We are about to begin the lambing season, and the ewes are every day breaking down. The consequence of this, I fear, will be a small show of lambs and great losses in the ewes.” The wool was bad in quality and short in quantity. The epidemic continued for a long period, and particularly among the sheep.—Mr. H. L. Maws, of Crowle, near Bawtry, says that, “about the middle of October, 1841, he first became aware of this disease among his cattle; but two out of a litter of pigs died, and he was doubtful whether it was not from this distemper. With this exception it confined itself, at that time, to the cattle.” The weather had been clear previous to the cattle being really attacked. It afterwards became damp. Mr. Maws’s cattle became infected by a tenant of Lord Manvers, who occupies some land of his lordship’s adjoining his, by putting diseased cattle that had been some time affected with distemper in an adjoining close, without giving notice that he was about to do so, and so put people on their guard. An old high hedge and ditch separated these closes. The cattle which had infected Mr. Maws’s caught the infection at Epworth fair. Most of the cattle were at grass,

and in severe weather were all housed at night. All ages appeared to take the disease, but perhaps some very young calves were least liable. . . . The disease first and mostly appeared in the mouth, but also in the feet, although not to the same extent. . . . We threw away all the milk until the cows were quite clear of the distemper, and most of them gave very little milk afterwards. . . . I understand that several mares in this neighbourhood have slipped their foals, and I am now very much inclined to think that there is some connection between their doing so and the cattle epidemic. . . . The epidemic lasted about five or six weeks, most of the cattle being ill three or four days before we were aware of the precise nature of the ailment.

‘The bailiff of the Hon. C. Dymoke transmitted an interesting account of the epidemic. On the 28th of August, 1840, it commenced among a hundred head of cattle in Scrivelsby Coast Park, near Horncastle. In September it broke out among the *sheep*, the *deer*, the *pigs*, the *poultry*, and the *young horses*. The situation was well screened with wood, but rather damp. The cattle were out at grass, in good condition, of all ages, and might have taken the disease from cattle passing along the road. White bladders appeared in the mouth, and the feet were affected on the following day. In many cases the disease began to die away, but reappeared in the course of a few days. The first attack was exceedingly severe, but the second was of a milder character. They were fed on hay during their illness, for during the first week or ten days the tongue was in a dreadfully inflamed state. . . . One three-year-old colt was lost, but no other stock. Many of the cows lost their milk for a week, but it returned as usual. The milk of the diseased was sometimes given to the calves, and no harm followed. “It was very prevalent in the farms in our neighbourhood in the July of the second year, and violent in its attack. Many of the ewes lost their lambs, casting them before the proper time.” In September, 1840, the deer were much affected by this disease. They were lame and weak. Nothing, however, was done to them, and they all recovered.

‘The cows of H. B. Benson, Esq., Utterly House, near Louth,

on the 13th of November, 1840, first showed symptoms of the epidemic, which extended to calves and other stock, with the exception of a bull and two heifers suckling their calves. The full-grown cattle appeared to suffer most. The disease first appeared in the mouth, and only three out of thirty of the cows were affected in the feet. None were affected a second time.

‘ The disease began among the cows belonging to J. Harries, Esq., Thorganby Hall, North Lincoln, in October, 1840. In November it attacked some Scotch bullocks, and extended to the sheep and pigs about the middle of December. The weather was rainy, with south and south-west winds. They had not travelled on any public road, but they were out of doors, in good condition, and living on grass. The sheep were not attacked until they were put on turnips. The cattle were all three-year-old beasts. The first symptom of disease was a discharge of saliva from the mouth—the back forming the segment of a circle, and there being lameness in both feet. It is very difficult for a non-medical person to distinguish between a second attack of disease and a relapse from an advanced stage of recovery; but Mr. Harries imagines that there were many cases of sheep in his flock being affected a second time, and that with unusual severity. No beasts died, but about forty sheep out of a thousand were lost. They died very lean, but not generally discoloured. The cows had the disease in a mitigated form. For some time the milk diminished or could not be used. A flock of ewes in lamb, that were sent to turnips on the farm, suffered very considerably from abortion. . . . At the time of writing this, February 22, 1841, it still rages at Thorganby as violently as ever. At Elkington it has disappeared, leaving many sheep very lame. The beasts at Thorganby recovered soon after Christmas. The few cows at Elkington, giving milk, have suffered, and still suffer much. Their udders inflame, and suppurate, and break, and spoil them for many weeks, so far as milking is concerned.—Two cases from Spilsbury and its neighbourhood are considerably interesting. The first belongs to Mr. W. B. Wingate, of Hareby, near Bolingbroke.

At the latter end of August, 1841, the disease appeared among the shearling ewes that had been removed from other parts of the farm, and which extended with more or less virulence to all kinds of stock kept on a breeding farm, except the cart-horses. His sheep had been on the farm with the other stock, but there was no chance of being affected by others. It was the same with young and full-grown cattle. The symptoms were, excessive fever in the mouth, with lameness, and frequent gathering in the feet. A great number, both among sheep and cattle, were infected, and many of them a second time, but with less virulence.—The cattle of G. Bourne, Esq., of Hocton, near Spilsby, were attacked by the epidemic in May, 1840. He was driving some half-bred oxen from the place where they had been tied in stalls all the winter. The weather was very hot, and the roads freshly laid at that time. They were kept apart from the others, and no other cattle had the disease. His were the first beasts that were attacked in that neighbourhood. They were four years old. Before they reached the termination of their journey they were crippled in all their feet, and had sore mouths. Not an animal, however—sheep or cattle—was lost, nor any of the horses or cows seriously ill.—Mr. C. Hill, of Winceley, near Horncastle, living on a hilly ground. A heifer calf was bought by him, and soon exhibited symptoms of the prevalent disease. It spread among the cattle and sheep, and the mouths and feet became diseased. No disease occurred to the horses, although they fed with the cattle during the whole of the time. The sheep continued lame for a considerable period after the cattle were all well.—Mr. Bentley, of Clay Bridge, near Lincoln, says that the disease broke out among his cattle on the 28th of September, 1840. . . . In three cases it appeared a second time. The first attack of the disease was particularly severe.—F. Robinson, Esq., of Frampton, near Boston, says that the disease first appeared in two beasts which he bought on April 24th, 1840. They were ill of the complaint as soon as he got them home. This was probably caused by the hot and dry weather which then prevailed. It was a long time before they recovered. The

sheep in the same pasture were not affected. The feet were first affected, and then the mouth. It became much more serious in the sheep than in the cattle. The milk was usually suspended, or thrown away for about ten days, and was then as good and as much as ever. It was once given to some pigs, and all of them became diseased. The sheep became diseased on the 24th of December. They still remain very lame, and, whenever there is frost without snow, it so cripples them that they become worse again, and those who have not previously had it keep falling.—Mr. R. Green, of Skillington, near Grantham, says that the epidemic first appeared in the second week in April, 1840, among some cattle of the steer kind, in the straw-yard, and afterwards the swine in the same yard, and ultimately among the sheep. They had been driven to a fair at Grantham, about eight miles, but returned unsold. The epidemic made its appearance the third day after. Not a single case had been previously heard of in the neighbourhood, and they were quite well before they were taken to the fair. They had travelled along a public road, and had likewise stood intermixed with other cattle. . . . The disease commenced in the mouth, but soon afterwards extended to the feet. They were chiefly of the heifer breed. . . . Some of the cattle had cutaneous eruptions about their legs, and nearly the whole became lousy after their recovery. Those who had it mildly thrived well afterwards, but the epidemic gradually spread through the whole of the flock, and remained about a month. Mr. Green had two farms about ten miles distant from each other. The cattle on the farm in which he resided escaped it until the autumn, but all had it afterwards, and generally in a milder form, except some that he had purchased, which had been driven, and probably caught cold as well as the disease. The total number that had it in both places was about seventy. Those at his residence had not been intermixed or very near to any that had the complaint, until after it broke out, as he refrained from buying in. With regard to his sheep, who had all, or very nearly so, been diseased, he considered the complaint to have made great havoc, not particularly in their absolute dying, but in losing

their flesh. A great many that were fat became quite lean, and so lame that it will be a long time before they recover, and this will not be until their hoofs are replaced by new ones. He has had about eight hundred affected by it.—Mr. Beasley, near Grantham, had a herd of cattle in good store condition, feeding on grass only. All were attacked by this disease, soreness of the mouth, and stiffness of the joints. It invariably showed itself first in the mouth, and none of the cattle were affected a second time. He lost but one out of eighty. The milk diminished in quantity, and was useless at the time, but in all cases returned. One calf had it so badly from a diseased mother, that he despaired of saving it for some time. None of the cows altogether escaped the disease. The steers were not attacked until they came into the yards in autumn.—Mr. B. Millington, of Asgaiby, near Sleaford, lives on a dry and moderately wooded farm, with a heavy loam subsoil. Some infected cattle had passed along the road. His cattle were in good store condition. Ninety-two of them were diseased, and one only escaped. He was two years old, and the others from one month to twelve years. They were generally attacked in the feet first. This is not usually the case, but was so in the present instance. All of them were affected except the sucking calves, but none had the disease a second time. The sheep and cattle of some of his neighbours, however, did not escape the second attack. . . . Generally speaking, the disease was severe in proportion to the age of the beast. Not one of his whole stock was lost. The milk, which in most of them was diminished in quantity, returned, but not in its full quantity. Abortion was sadly frequent. Out of nineteen cows, five aborted at about nineteen weeks. The nostrils and mouths of the calves were occasionally very sore. The epidemic disappeared as to cattle in September, but continued occasionally to show itself through December. The reason why he had so many bad in so short a time, was that he turned them out together for the purpose of their having it, and becoming stronger for winter.—Mr. J. Snow, Evendon, states that it appeared in July, 1840, beginning with an aged bull, and running through the whole

of his feeding stock. They were affected in the mouth and feet, and in both at the same time. Three or four had it a second time, but under a mitigated form. The first attack was always the severest. The quantity of milk was greatly diminished, even when the udder did not appear to be affected. The calves, when weaning, were affected at all ages, and the whole of the calves when sucking infected cows.¹

ESSEX.—Mr. Wallis, of Halstead, reports: ‘It has prevailed here in all situations, on almost every variety of soil, pasture, and previous feeding. It began in May. I had, however, one case in March. It is both infectious and contagious. As to the former, in one yard it began with the milch-cows, and spread through all the stock, save the horses, which I have not yet known to take the disease. Now, the bullocks that were here tied up in the house could have no communication, but through the air, with the other cattle which were in the yard adjoining. In the cows, the head was chiefly and alone affected; while in the bullocks tied up the feet were primarily and throughout the seat of the disease. The mouths, however, were sore. I could adduce many such instances. It seems that the air does not carry the infection to any great distance—at least in all directions. It has been very common that cattle on an adjoining farm, separated only by a distance of a few rods, escape. One instance I specially refer to, where a dozen bullocks, tied up in the house, were attacked, and within fifty rods were large quantities of stock, and not one took the disease till within the last month, constituting an interval of six months. The disease has been frequently carried from one yard to another by driving cows to a bull, on one side or the other. Those which are tied, as well as those compelled to travel on the road, have generally suffered most with the feet; while such as have been running loose in a yard have been rarely so affected. As to its being contagious, I have little more to say that can be considered to bear upon this point, viz., its uniformly spreading through all the stock placed within a certain limit; the uniformity of the symptoms developed in those placed in contact with each other and in

¹ The Veterinarian, vol. xvi. p. 570.

like circumstances ; and, lastly, I would mention that, on one or two individuals in this neighbourhood having had their hands abraded in salting the mouths of the animals, small pustules have formed on the arms and face. . . . Two died in the early part of the summer, being the first that had the disease here (except one, as I have already stated, that was attacked in March). They had been ill several days before I saw them. The post-mortem appearances closely resembled those presented in animals that have died under bronchitis. The bronchial tubes were filled with frothy mucus, and the poor beasts died from suffocation. In these cases the primary symptoms became aggravated, the tongue assumed a gangrenous appearance, the breath was very offensive, the respiration became very laborious, and then followed exhaustion, suffocation, and death. Three hundred were affected, as nearly as I can calculate. Two deaths : in the neighbourhood many hundreds, if not thousands, have been ill ; few deaths. With regard to a recurrence of the disease, it has not been observed in any case. The cow already mentioned as having had the disease in March was then and for some time after alone ; but during the summer the owner bought in more stock, and these have lately been attacked ; but although the cow has been constantly with them she has escaped.'

NOTTINGHAMSHIRE.—Mr. Hutchinson, of East Retford, sends the following account :—'July 7th, 1840 : Mr. Gamston had seven milk-cows. The first of them was affected on this day, and the others were ill on the third day. I found them with a large quantity of saliva hanging about the lips, and they were constantly champing with a peculiar sucking sound,' etc. 'These cows had been running in a field next to the Great North road, and possibly they might have come in contact with some diseased animals passing thereon. The pigs in the yard exhibited the same complaint on the second day after the cows. July 8th : Mr. Marsden Morton had twelve young bullocks and heifers, nine of which became affected ; the other three escaped, although running in the same field. . . . They

had been running on a piece of forest land, by the side of which was a road, and a quantity of very lame sheep, going to Rotherham market, had passed a few days previously. 28th: Eight milking-cows upon the same farm are affected. August 1st: Mr. Gyles, Treswell, had three cows affected. One was rearing a valuable calf. The calf was removed into a shed by itself. The cows in four days recovered by the treatment as before. The calf became suddenly unwell on the 12th, but soon recovered. September 27th: Twenty-nine Irish cows, belonging to the same farmer, were running in some marsh land at Treswell. Twenty-two of them became affected and lame. October 7th: Five milk cows at Eaton, belonging to separate cottagers, are bad and lame. At Ollerton nine heifers are affected. October 22nd: Twenty-two heifers are grazing in some low meadow land at Clayworth; three only received the disease. I removed them into a separate pasture for a few days. 30th: Thirty-six animals, viz., six milk cows, eight feeding bullocks, and the remainder straw-yard beasts, are bad at Hodseek. The disease first appeared amongst the bullocks, and in three days had extended to the others. Mr. G., Ollerton, had twenty-two straw-yard and four milk beasts affected. November 7th: Two milk cows, belonging to Mr. Bower, Retford, are in a field by themselves; one only is bad. 13th: Two milch-cows at Retford are both bad and lame. The pigs in the sty are bad. 27th: Four milch-cows on the same farm are bad. November 4th: Mr. Bebnorth bought a heifer about ten days ago. She has had the epidemic, and her teats are now very sore. This day several pigs were perceived to be lame in the fold-yard. November 19th: This day the disease made its appearance amongst the cattle; eight bullocks are bad. The yard contains about fifty feeding and straw beasts and twenty milk-cows, all of which have been affected, except seven at straw. Some of them are very lame, after being attacked from thirty to forty hours. December 21st: Mr. G., Ollerton, bought fourteen young heifers from a jobber; they had travelled some distance, and had had the disease previously. I saw them to-day. They can eat as well as any other stock,

but are excessively lame. Two of them have lost a hoof from the hind feet, and the horny sole is completely separated in nine of the others. December 21st: Four milk-cows, near Allerton, have the epidemic; they have been treated by the owner. Three of them are now bad from mammitis, and I think they will lose one-quarter each, if not more. December 22nd: Mr. G. Hedbrey had nine milch-cows ill, but they soon recovered. Some young stock became affected, and at the present time his milch-cows are again suffering from the disease. This is the only case I have known where the same animals have been twice affected. . . . In many cases they travelled along roads on which infected animals had travelled, and thereby received the infection. . . . I am perfectly satisfied that, where the disease has made its appearance, it becomes highly infectious. . . . I think the disease is not only infectious to the same species, but even an infected animal, such as the cow, has the property of giving the disease to the sheep or pig, and *vice versa*.¹

LANCASHIRE.—Mr. Hayes, Rochdale, reports in March 1841: 'We have been visited by this strange and little-known disease. Although it has not been fatal, except in a few instances, yet it has been the source of much trouble, annoyance, and expense to cattle-keepers. It first made its appearance in this district in the beginning of July last, at a farm two miles from this place. The whole stock, seventeen cows and a bull, were affected in the space of six days. . . . The weather, previously very dry, had now changed to wet. There had been works lately erected for the manufacture of naphtha on one part of the land, the refuse of which was allowed to run down the ditches through the pasture, and into the pond at which the whole of these cattle were watered, and which water was covered with a thick black scum, very foetid, that came down from the works in great quantities. This was first thought to be the cause of the disease by the owner, and also by the cow-doctor of olden times, and the proprietors of the works were threatened with an action at law against them forthwith; but before proceedings commenced, the owners'

¹ The Veterinarian, vol. xv. p. 565.

attorney called on me. . . . Few districts escaped, yet there are two townships near here where not a single case has appeared for a long time. The farmers in these parts determined not to buy any fresh stock until the disease had subsided, and so far they have been successful. . . . It raged from the beginning of September to December. The state of the weather was the two extremes of dry and wet at intervals, but principally wet and foggy. By the strictest inquiry I cannot find one dairy in which I am not able to trace the seeds to either a fresh cow, pig, or sheep, or the contact of servants, or the master himself having been in contact with diseased animals. In one large dairy the owner took every precaution to keep his stock free ; but it soon broke out amongst them, and twenty-four were affected in one or two days. He was quite astonished, and thought nothing could have carried the disease to his cattle ; but on my questioning the herdsman, he acknowledged he had several times visited and examined affected cattle in the neighbourhood. As the public roads are very numerous in this district, and very much frequented by dealers in cattle, pigs, and sheep, between the northern and midland counties, for the supply of Manchester and other markets, and also from Ireland, nearly all the farmers, etc., are compelled to make use of these roads, and consequently did come in contact with infected animals. I have found in general, that the servants or other persons have come in contact with other neighbours' infected stock previous to their own becoming diseased. I am of opinion that it is carried or communicated from one animal to another by contact, either actual or conveyed by some intervening body in some shape or other, and not by atmospheric influence ; for I have known many cows that have been bought during the last eight months from farmers whose stock had not been affected, nor have been so since, yet these cows, after being tied up in stalls where diseased ones had stood before, on the next morning had their feet affected, and on the next day their mouths ; and in a day or two after this the disease was fully developed. Yet the remainder of the stocks whence these cows came have until now remained quite free—a period of four months. I

also know several farmers who have not allowed any person connected with their cattle to go near the stock of another farmer where they knew the stock to be or to have been affected, nor any other person to come amongst theirs ; and certainly, all who took such rigid precaution have escaped this pestilence.

‘The earliest symptoms I observed were : A staring coat, with a rheumatic stiffness, and soreness of the whole frame ; a painful and stiff, unwilling gait, with much shaking of the feet. In a few hours they began to shuffle about in the stall ; about twelve hours after this, champing of the mouth appeared, with sucking of the lips ; a ropy, tenacious, slimy saliva constantly pouring from the mouth ; perhaps in another twelve hours the disease was fully established. After the above symptoms the posterior portion of the heels begin to look very red with inflammation between the clefts of the feet and all round the coronets. In twenty-four hours there were separation of the integuments and ulceration, the parts being very tender and painful. Soon after, or already, vesication appeared on the upper gums, the tongue, lips, and sometimes the nose, and which seemed to take the same course as those on the feet ; and I have observed, in many cases, these vesicles extended to the larynx, and down the œsophagus. These I have seen in cases of post-mortem examination at the butcher’s, etc. This is the cause of the difficulty in swallowing which we sometimes see. The teats now begin to be affected with the same kind of vesicles, and are a source of great evil, as, from the pain and difficulty there is in milking, garget or inflammation of the udder frequently ensues. In many cases the disease terminated in congestion either of some of the internal viscera, or some external part. Frequently, near the udder, hip, stifle, knees, and other joints, it appears in the shape of large indolent tumours, which, on an incision being made into them, are found to contain nothing but coagulated blood in great quantities, and much blacker than usual. . . . The number in this neighbourhood, as near as I can ascertain, attacked by this disease, was about four hundred or upwards.’¹

¹ The Veterinarian, vol. xiv. p. 193.

Mr. Dawber, Liverpool, in July, 1841, describes some cases as occurring there, but unfortunately he gives no dates.¹ It must have been present in this part of Lancashire at an early period, however, for we are told that on the 5th of January, 1841, 'in the Royal Physical Society, Mr. Kirkham, of Liverpool, read a paper "On the Disease at present raging among Cattle," of which the following is an abstract : It affects oxen, sheep, and pigs, and is nothing more than a sort of slight influenza. . . . An interesting conversation ensued, in which Mr. Dick expressed concurrence in the facts stated by Mr. Kirkham. The result of the discussion may be summed up in the following manner : 1. The disease is much more general than is supposed. At one time about one-half of all the cattle were ill at once, and not more than about one in ten has escaped. 2. The disease is less dangerous than is generally supposed. 3. Neither the flesh nor the milk are in the slightest degree affected. 4. For two years the disease has been travelling westward through the Continent. *It then came to Britain on the eastern coasts. It has now nearly disappeared from the east, and is raging with considerable violence in the west.* It thus appears to be following the same course as the cholera took, although the disease bears no similarity to it.'²

YORKSHIRE, NORTH RIDING.—Mr. Holmes, Thirsk, in January, 1841, writes : 'The first time that the epidemic made its appearance in this immediate neighbourhood was about the middle of last June, when it manifested itself among two or three herds, and was, to the best of my belief, confined to them alone. The symptoms were but slight ; there was lameness, accompanied by a little frothing at the mouth, but no breaking out at the feet. Nothing further was heard of the disorder, as regards its spreading, until about a month afterwards, or the 18th of July following, at which time a fair was held at the village of Sopcliffe, about five miles southwest of this place, where it showed all its baneful symptoms among some lots of Irish stock that were at the fair. These

¹ The Veterinarian, vol. xiv. p. 420.

² The London and Edinburgh Monthly Journal, 1841, p. 43.

Irish stock have, by common consent, been considered as the introducers of the epidemic into the Yorkshire Ridings; and from that period to the present the contagion has, more or less, been rapidly spreading through every park and pasture in the three Ridings. Such were the first effects that a complete and total stagnation of the sale of any kind of Irish-bred stock took place; for buyers of such were about as scarce as Queen Anne's farthings. . . . From the number of cases that I have professionally attended and casually heard of and seen, no state or condition, no situation or locality, has protected the poor cattle from the sickening hand of the insidious foe. . . .

The general symptoms that I have observed since the first appearance of the epidemic are a staring coat, the eyes a little sunken in the orbit of the head, large blisters arising on the base of the tongue, and containing a white kind of serous fluid, and the blisters sometimes extending from the base to the tip of the tongue; the front teeth of some very loose, a great discharge of saliva from the mouth, and, in bad cases, a jelly-like fluid instead of saliva; tenderness on the skin and back when touched, so much so, that a common observer would say that some one had been beating them severely with a stick; and, if compelled to walk, they appeared as if walking on stilts. They very much resembled a horse labouring under an attack of laminitis. . . . It does not seem to me that one organ alone is attacked, but every organ, more or less. The mucous membranes appear to be particularly so. I have sometimes gone into a field among a number of stock, and have pointed out some as the next most likely to be invalided. They did not then either evince lameness or show any discharge from the mouth, yet their apparently starved and chilly looks convinced me that they were infected, and the correctness of my judgment was not long in doubt, for all the other symptoms shortly afterwards rapidly developed themselves. Some would be quietly chewing the cud in an apparently good state of health, and yet scarcely half an hour afterwards would show all the peculiar characteristic features of the complaint. . . . A friend of mine gave me a long and elaborate account of its

commencing in *Spain*¹ in 1838, and proceeding thence to Switzerland, Hungary, Bohemia, Prussia, Holland, Belgium, France, and then to England. The prevailing symptoms in those countries were in many instances of a similar character to those attendant upon the disease in this country; but sometimes they were considerably more intense and fatal. I believe the disease showed itself with a greater degree of virulence in Holland than in any other country. It also seems to have passed from France by means of the Channel intercourse into the southern counties, and so along by the western districts, until every district has been more or less visited. A wet and damp state of atmosphere seems to favour the disease, while a clear frost appears to operate reversely. A week's continuance of clear frosty weather almost cleared us of the nuisance, when a return of moist and warm weather again rapidly multiplied new cases. As yet I have not heard of or seen a second attack. That the disease is contagious there is not the least doubt; for no sooner has an infected beast been driven near or associated with others than they have speedily shown symptoms of bodily ailment. I have also known it appear among stock that had for months no visible direct communication with the infected, nor even with other cattle, and among others that had never been nearer strange stock than having been pastured in a roadside field, where the infected might probably pass. As soon as the disease made its appearance upon a farm, it spread like wildfire over most or all of the adjoining ones; and yet, at the same time, there was no apparently direct communication with the infected, and which were also generally removed, as soon as the disease was observed, to a place where the others could not possibly have any access. From this probably may be deduced a not very unreasonable inference, viz., that in the present case, as in human ills, there seems to be an atmospheric agent wafting abroad the effluvia or seeds of disease and death. I have seen a whole fold of pigs take the disease

¹ This may be a mistake. There are no records, so far as I am aware, to prove that Spain was invaded by the epizooty. As before noticed, that country, for obvious reasons, had enjoyed a wonderful immunity.

before it was in the least manifested among other stock. The symptoms in pigs were very much the same as with beasts or horned cattle. The disease among pigs has not been so very fatal here as more northward, where several farmers have lost their whole stock. Sheep appear to me to have suffered much more considerably than cattle. I have recently heard of a person near York, who lost eleven young calves about one day or so after calving; of another who lost four; and a third who lost six in the same way. All the cows had the disease previous to calving, but had recovered before the dropping of the calf. . . . I have seen the milk of a cow that had the epidemic curdle when boiled; in others not the slightest difference was apparently observable. I have heard of a few individuals who evinced symptoms something similar to what animals in the epidemic showed, from partaking of the milk; and I know others who partook of the same with impunity. The difference seems to me to consist in the predisposition of the constitution of the individuals to the disease, as well as the severity of the disorder of the animal from whom the milk is drawn. For my own part, I have generally recommended that the milk of such cows as were infected should not be used until five or six days after convalescence, when the healthy quality of the milk will have returned. I have known pigs show symptoms of the disease ten hours after taking the infected milk. I have also known it given to cats and dogs who experienced not the slightest visible ill effect. To a foal of mine, the milk of infected cows was given for about a week, and no bad result was afterwards in any degree exhibited.¹

‘Upleatham, in the North Riding of Yorkshire, about two miles from the sea, is the property of the Earl of Zetland. It is a hilly country. The soil is high and dry, with the substratum a sandy rock. The cattle, in the pasture where it made its first appearance, had not been connected with any others for a period of three months. It broke out suddenly, when it was previously not known within twenty miles of the place, and no cause apparently indicated or suspected. The first beast that was infected was a two-year-old steer,

¹ The Veterinarian, vol. xiv. p. 87.

and it extended to others of the same age or older, and also to a cow that was not in the adjoining pasture. Those that were fully grown were most liable to be attacked. The first appearance of the disease was generally in the mouth, but there was some tenderness of the feet at the same time. None of the animals were affected a second time. The secretion of milk was always more or less suspended, and was generally intermixed with purulent matter. . . . Shortly after the disease in the cattle, three or four horses were affected. There were enlargements about the throat, which it was necessary to open, and which sometimes extended to the legs and feet.'

'Mr. Rutson, of Kirby-Wicke, says his cattle had no direct communication with any others, but were near a public road. The disease first appeared in a heifer out of doors. . . . One of his tenants, with cattle of all ages, had a two-year-old bull the most severely affected of the whole. None of his cattle were affected a second time. . . . In many places it occurred suddenly, and without any assignable cause. Some of his cattle, after having been tied up six weeks without any previous indication of mischief, failed.'

'In other cases attempts were made to communicate the disease both to cattle and sheep, particularly to some cows in calf, by putting them together, and also by the food that had been placed before diseased cattle being given to them. He had some black-faced sheep three months, that were selected from a lot bought from a northern fair; they were driven home, and not a single individual became ill, but the remainder fell amiss the very day after they were selected.'

'Mr. Booth, of Killerby, Catterick, had his share of the disease. There was no possible communication with other cattle. About a fourth of the number were out of doors—the rest housed. The frost was severe, but the animals were in good condition, and were fed on turnips and straw. The disease commenced with the young cattle, after which it spread indiscriminately. . . . No deaths occurred. When the udder was not affected, the milk generally returned in its usual quantity; but when the udder had been diseased or

ulcerated, the flow of milk sometimes ceased altogether. Abortion in one case followed the disease. The malady has not appeared in the feet of suckling animals, nor were there any cutaneous eruptions before or after the disease.'

'Mr. Levers, of Richmond, gives the following account of the disease: "The epidemic first made its appearance among my cattle in August, 1840, and was for some time confined to a particular pasture, which was stinted with fat cattle and sheep, and at that time quite ready for the butcher Subsequent to that, the whole of my cattle and sheep became affected, which numbered about seventy head of cattle, and three hundred sheep. What was rather singular, I never directly lost any one animal, but indirectly I have been a great sufferer: 1st. From loss of condition, after which it required some months to get the animals into the same state as when they were first attacked. 2ndly. From my cows calving prematurely. I had twenty-three that did so in succession, and a very serious loss among my sheep in a similar way. . . . I had a great number of both cattle and sheep that lost their hoofs.'"

'Mr. Bates related: "I have only had one case, a cow; but the epidemic has prevailed in my neighbourhood, and adjoining my farm. It appeared on the 26th day of October, 1840, in the parish of Kirkleavington, near Yarm, in the North Riding of Yorkshire. My cattle had not been in communication with any others. This cow, and about twenty more, travelled along a turnpike road, between their pasture and the cow-shed, where they were milked twice a day. On the 19th of October there was a large fair at Yarm, two miles from hence. Many diseased cattle were at the fair; and, as a precaution, we laid lime upon that part of the road where they crossed from their pasture to come to the cow-houses, and did not, for a month after the fair, drive the cows along the road, as previously had been done for nearly a quarter of a mile in length, four times a day. The cow was at grass, having calved on October 2nd, previously. . . . When brought out of the field to milk, before five o'clock in the morning, she was not perceived to be unwell; but when she

returned to the field a glairy fluid was observed to run from her mouth among the grass, which she was unable to bite. She was brought into the house immediately, separate from all other cattle, and there tied up, and kept for thirty-six days. . . . On opening her mouth the inflammation was evidently very great, affecting her tongue, etc., etc.; in three days her feet became affected, and she was very lame for three days afterwards. There has been no return of the disorder either in this cow or any other. . . . I attribute the speedy recovery of this cow to the close attention paid to her, and they who went to see her never came near any other of the cattle. This precaution, and keeping the cow secluded, was the cause of its not spreading among my herd. In all cases near me it went through the whole herd. The disorder, somewhat abated, is yet said to exist in the district.”¹

WEST RIDING.—‘The tenants and neighbours of Joseph Dent, Esq., of Ribston Hall, had their cattle and some sheep affected six months before his, on account of his having as little as possible intercourse with them. The first appearance in his farm and among his fat cattle was in the latter end of November. It extended to the milch-cows, all of which were housed. It then attacked the young stock in the farmyard, and lastly was observed in the heifers and cattle in the adjoining fields. The fat cattle and the milch-cows were first attacked by soreness in the feet, and refusing their food; those out of doors were then affected in their mouths. The fat cattle suffered very little, but the milch-cows more; and on account of the weather being exceedingly severe, and there not being an opportunity for shelter, the outdoor cattle suffered most of all. . . . The udders and teats were sore. None of the young calves living upon the milk of the infected cows took the disorder; the plan was adopted of serving from the pail, and not allowing them to go near the cows to suck. Some had a scurfy eruption on different parts of their body and round the eyes; but this is sometimes seen in young cattle.’

‘According to John Barrowly, of Baldersby, the disease

¹ The Veterinarian, vol. xvi. p. 274.

began to appear among the hogs and cattle in the fold-yard, and in the first week in January, 1841, it had spread to nearly all the sheep and cattle. It was distinguished by slavering in the cattle, lameness of the feet of pigs, and lameness and slavering in sheep. . . . The epidemic long remained among the pigs and sheep, and at length attacked the horses.'

'J. W. Childers, Esq., M.P., of Cantley, states that "the epidemic first appeared in his stock about the middle of October, attacking the pigs first, then the cattle, and lastly the sheep. The disease commenced about five days after some of them had been brought along the public road from the market. . . . The full-grown cattle appeared to be more subject to the disease than the youngsters were. In the pigs and the sheep the feet were most implicated, and the mouth in cattle. The sheep were sometimes affected a second time, but not the cattle or pigs. The disease then assumed a mitigated form, and was confined entirely to the feet. Not one animal died out of four hundred and fifty sheep, thirty-six cattle, and forty-two pigs."

'C. Charnock, Esq., Homefield House, Ferry Bridge, states : "The first symptoms of the epidemic that appeared in my stock were in a heifer about eighteen months old. I had six of nearly that age in a public pasture near the riverside, when a butcher turned a fat beast, which he had bought at Wakefield, into the pasture. It was badly affected, both in the feet and the mouth. It had been in the pasture two days before I heard of it. I immediately had my heifers brought home, and found that the smallest of them was ill of the disease. This was on the 20th of October, 1840. . . . On the 10th of January, one of a lot of sixteen heifers in an open fold, that had had no communication with the above-mentioned nor any diseased cattle or stock whatever, exhibited the disease in both its tongue and feet, and the number of stock mentioned were affected in the course of the week. . . . There are some cattle in the yards which have not been affected at all. January 1st, 1841, I had three hundred and fifty hoggets and one hundred shearlings eating cut hybrid and Swede turnips in the field I before mentioned, and three hundred breeding-ewes feeding

on the scraps after them. In the afternoon of January 2nd my shepherd found a few of the hoggets and shearlings lame. I examined them next morning, and found decided symptoms of the disease having attacked them; and in the course of January 4th I found several of my ewes likewise affected.”¹

‘Sir Godfrey Webster gives an interesting account of his cattle. His ground at Woolley Park, near Wakefield, is rather flat, yet somewhat elevated; the situation dry, and well wooded. His cattle had not been in communication with any others. The disease made its appearance first in a lot of West Highland heifers three years old, on the 14th of January, 1841. It extended to seven store-pigs in the yards, and about half the number of cattle were affected. They were out of doors, in good condition, had been running in the park, and during the storm were in a yard upon barley-straw. They were evidently losing condition, and forsaking their food. This was three days after their supposed infection. There was disease of the mouth first, and afterwards of the feet; and the oldest cows were the worst, both in the feet and the mouth. In some herds the disease appeared more than once, but it was not so violent in the second attack. The number of animals attacked by the disease included shorthorn cows, heifers, steers, calves of different ages, and three and four-year-old West Highland heifers. One calf died at a week old, but that was the only animal that was lost. Two calves were tried from the milk of the infected cows: one of them died, as just stated; the other, a little older, was also attacked, but very soon recovered. Females pregnant, or when suckling their young, seemed equally to participate in the disease, but which seldom or never produced abortion. A few of the incalf heifers, and some that were in milk, and also several store-pigs, were attacked with cutaneous eruptions.’²

EAST RIDING.—‘At Shipwell Hall, the residence of J. P. Tulson, Esq., an epidemic made its appearance about the middle of August, 1840, among the lambs. They had no communication with any other animals except that they crossed the public road from one side to another, and not herding in

¹ The Veterinarian, vol. xvi. p. 386.

² Op. cit. p. 272.

any place where diseased animals were or might have been, so as to communicate any disorder. There were one hundred and nineteen lambs. Three died at the commencement of the disease, and three afterwards.'

'Mr. Smith, of Bridlington, in the neighbourhood of Flamborough Head, states his flock was one of the first affected. On the 27th November, 1840, the disease suddenly broke out, including wether shearlands and draught-ewes, gimmer shearlings, and rams. In the space of ten days it extended to the wether and tup-hogs, and in all two hundred and eighty were infected. The disease was also partially spreading to the cows. The disease had not infected or appeared in any flock within two miles of the place. . . . The *milk*-cows were the only cattle affected. . . . There were many cases of sheep having been affected a second and even a third time, with augmented severity. This was observed in the present instance in fifty among the fat sheep, and twenty among the hogs, and in both with considerable severity. . . . Abortion, in some flocks, prevailed to a great extent.'

'Mr. Shaw, of Brantingham Hall, early in November, 1840, purchased six in-calf Galloway heifers from a jobber near Thirsk; and as the epidemic was raging at the time, these animals were placed in a wheat-stubble field by themselves, and at a distance from any other cattle or sheep. One of the heifers arrived with the disease upon her; the others all took it in three days, being attacked severely both in their mouths and feet. Two of them calved dead calves, both of which were affected by the disease. . . . They all recovered by the beginning of December, and the disease did not spread among his other cattle, although it was very prevalent all around. In the third week in November, however, three ewes appeared to be infected by the epidemic. On the 25th of January, 1841, it attacked a yearling calf, and then going through the cow-house, where more than forty head of cattle became affected by it, as did likewise all the pigs, who had it slightly in their feet. When the attack on the cattle commenced, the ground was covered with snow, and the wind blew south-east. The animals just referred to had not been in communication with

any others. They had not been driven along any public road, nor herded with any diseased animals; nor, to the best of Mr. Shaw's knowledge, had any person been near them who could have communicated the disease. They were in a grass field, in good condition, and three or four years old. The young calves were first attacked. The disorder usually appeared in the mouth, and then in the feet; in some cases in the feet only. The sheep and beasts were affected in both the mouth and feet; the pigs in the feet only. Out of three ewes affected none died, nor any out of twenty-eight pigs; but one cow and one calf out of forty did die. In the cow the lungs were highly inflamed; the calf was quite putrid. Out of four cows far advanced in pregnancy, two produced dead calves, and two picked their calves. After this disease subsided, all the cows were attacked with cutaneous diseases of greater or less violence, and the condition of them all was bad. . . . With respect to sheep, three ewes only out of three hundred have as yet been attacked, and that in November last. The moment the fact was ascertained they were separated from the flock, and it spread no farther.'¹

DURHAM.—'In Durham, Mr. Bainbridge, near Chester-le-Street, gives an account of the epidemic as it appeared on his farm. Out of one hundred head of cattle, eight only were attacked by it. The disease first appeared in the mouth, and thirty hours afterwards in the feet. They had all perfectly recovered in three weeks.

'Mr. Farrow, of Ash, near Durham, could not trace any connection between the disease and the soil or pasture on which the animals fed, but believed that it was at first confined to the cattle that had frequented the fairs and markets, and was spread both by infection and contagion. Any person or thing coming into contact with a diseased animal rapidly propagated the malady; and, wherever it was accidentally introduced by a diseased animal, it spread with a rapidity scarcely credible. A farmer purchased a calf in the market, and on his arrival home, in order to place the young animal in a warm and comfortable berth, he took it into the cow-

¹ Op. cit. p. 382.

house among his cows. Perceiving, however, that the young animal was unwell, it was quickly removed to another place, where it soon died. On the third day afterwards, the cow that had stood next to the calf became diseased. Three days after this the next exhibited symptoms of illness, and in six days the whole of the dairy was affected. The rest of the cattle on the farm were kept separated from these, and escaped. A pig in the same yard broke from his confinement, and got to the dunghill, where he ate some pieces of turnip that came from the diseased cattle. On the third day after this he became affected, while not one of the other pigs suffered in the slightest degree. The symptoms of the disease, as described by Mr. Farrow, are well deserving of observation. The animal seeks the most sheltered situation ; the legs are brought as closely together as possible, and the back is considerably elevated. The animal shivers at the slightest exposure to cold. The feet become affected, or frequently the feet and mouth are affected at the same time. There is, at an early period of the disease, considerable itching of the skin, and the animal is continually licking himself. On the 19th and 20th October, 1840, a cattle fair was held at Yarm, a market town on the east of the county. A drove of Irish cattle was brought for sale, but, having evidently the traces of disease among them, they remained unsold. A great number of the cattle that had been at this fair contracted the disease, which, no doubt, they had caught from these Irish cattle. It was not, however, until after the great fair held at Newcastle-upon-Tyne, on the 29th of October, 1840, that it could be said to present an epidemic appearance. This fair is the largest in the north of England. It is supplied with cattle from the surrounding counties, and great numbers of Scotch cattle are brought for sale. They have to travel great distances, and are exposed to the vicissitudes of the season. The night previous to the fair, they are brought within the suburbs of the town, and mixed with cattle from many different parts. The ground on which the fair is held is an elevated situation, exposed to the north and north-east wind. During the day a considerable quantity of rain fell, and the

wind was cold. It was evident that great numbers of cattle had contracted the disease. The unfavourable state of the day, and the fear of the epidemic too evident before the intending purchaser, caused a great quantity of cattle to be unsold. These, on their return home, and also those which had been purchased, very soon had the disease upon them. I should say that this fair was the grand means by which the disease was propagated to this and the adjoining counties. It was evident that almost every beast that had been at market sickened in a few days afterward. It was at this time confined entirely to cattle that had been at market ; but it soon began to appear along the public roads, and next upon farms adjoining those that had infected cattle. It continued to exist during the winter of 1841, either more or less, throughout the county, occasionally breaking out on situations where no direct communication could be traced with infected cattle. Towards the spring of 1841 it considerably subsided, or gradually died away. No sooner, however, had the movement among stock taken place, and which usually occurs at this season, than it reappeared. The summer produced few cases, but the number increased as autumn came on ; it, however, assumed a very mild character, affecting the animals in a very slight degree. Since that time it has occasionally appeared among the cattle on a farm, without any assignable cause, but generally confining itself to the place. There is at present (1842), at a short distance from me, a stock of fourteen Kyloes affected with it. They were bought in the autumn, and since that time had been pasturing upon a high and exposed situation. About a week previously it broke out among them without any discoverable cause. . . . The epidemic attacks those cattle first that have been at any market or fair. So convinced were the farmers in general that the disease is principally contracted at these places, that many of them refused to purchase any cattle from the market. In almost every instance the breaking out of the disease among the cattle on a farm could be fairly traced to infection. The animals had either been in contact with strange cattle, or fresh cattle had been brought on the farm. A great number

of Irish and Scotch cattle are brought into this county twice in the year—in the autumn for the straw-yard, and in the spring for grazing purposes. They arrive in large droves, and are sold to a great many farmers in small lots. The disease generally breaks out in these droves, which they are frequently obliged to rest for some time; but those that have escaped, and those that have recently recovered, are taken to the different markets and sold. The purchaser, being quite ignorant as to their having had or been amongst the disease so recently, takes no precautions, and the consequence is that the infection is propagated to the rest of his stock. These droves have caused the disease to spread more fatally than all other causes put together.'

Mr. Cleaver, of Darlington, reports: 'The epidemic made its appearance in the neighbourhood of Darlington early in August, being introduced by some lean Irish stock bought at Sopcliffe fair. The symptoms were extreme lameness, with discharge from the cleft of the feet round the coronet to the heels. . . . Sheep and pigs were affected the same way. The milk affected the pigs shortly after taking it, and it is believed that it was generally thrown away. The distemper did not spread much in this neighbourhood until the latter part of October. There is a very large cattle fair held at Yarm on the 19th; and a number of diseased cattle were brought there from the neighbourhood of Leeds and Wakefield. These beasts were bought up in small lots, divided into different flocks, after which the disease spread every day. In the district from twelve to fifteen miles round Darlington more than two-thirds of the farmers had the disease among their stock. . . . He heard of many beasts that had the disease a second time, and had got through it as easily as at the first attack. . . . He had only seen one decided case of epidemic in the horse; the tongue was skinned and the gums blistered.

'Mr. Wheatley, of Staindrop, Durham, describes it as having occasionally, yet very rarely, appeared in his neighbourhood. . . . Swine underwent nearly the same treatment as cattle. There were a few difficult and rather unusual cases among horses.'¹

¹ *The Veterinarian*, vol. xvi. p. 138.

NORTHUMBERLAND.—In the parish of Kirk Newton, Mr. Guy has a considerable farm. On the 30th of January (the weather mild, light southerly winds), the sheep-flock was removed for two days to a part of the farm on which there was a flock of diseased sheep, three-quarters of a mile to the windward of them. His flock was divided into two parts, in one of which the disease broke out on the third morning, and in the other on the fourth, and then pursued its path through both alike. The cattle were likewise affected. The mouths and tongues of the cattle were the worst, and the feet of the sheep. . . . Mr. Guy concludes by stating that, although this malady seems to be highly contagious when a diseased animal comes in contact with a sound one, and feeds on the same pasture, or pasture that has been trodden upon by infected cattle, and although the principle of infection seems to be in many cases conveyed by the atmosphere, yet there is a great deal of caprice about the matter. In his farm two large lots of hoggets were divided from each other by a thin hedge, and those on one side of the hedge were plainly infected, yet three weeks passed and the disease was not communicated. He knew also of several cases in which the ewes escaped, while the hoggets were affected. In other situations the contrary occurred. Another agriculturist, of the name of Hunt, and living in the same village, had seventy-six head of cattle, in all but four of whom the symptoms were very mild. They first appeared at the latter end of October, three months before they were developed in the stock of Mr. Guy. The milch-cows were earliest affected, and, after that, the fat cattle began to fail. It spread through the whole herd, with the exception of four beasts. It was a damp situation in which the cows were when they first took the disease, but all the young cattle were in the fold-yard when they were attacked. His cattle had no communication with any others. They never travelled along any road, or were hurdled in any place where diseased cattle had previously been; but they were attended by a person who was employed among cattle, and who was much blamed for bringing the infection into his yard.

‘Mr. W. Jobson, Chillingham Newton, states that the epidemic prevailed among part of his cattle, all his pigs, and part of his sheep. It also appeared on many farms within a mile of his, as well as on many others at a greater distance, while it totally passed several intervening ones. It made its first appearance in a lot of thirteen two-year-old steers, that were brought from a pasture twelve miles distant to his farm on the 20th of October, 1840, and put into a grass field, where turnips were laid down for them. On the morning of the 22nd, two of them were brought home unwell, and during that day the other eleven were all affected with the disease. It afterwards extended to more of his cattle, all his pigs, and part of his sheep. The weather at the time the disease began was open, with occasional slight showers of rain, but no frost until a long time afterwards. When the frost set in, it was thought that it would have stopped the further progress of the disease, but the sheep took ill after the frost commenced. The thirteen steers that were first attacked with the disorder had no chance of having had communication with other diseased animals, but they travelled along a road, on their way home, on which it was afterwards found that two or three lots of diseased cattle had passed three days before; and as they were halted for half an hour at a part of the road where there is grass, it is conjectured that some of the diseased cattle may have rested, and eaten grass at that place, and on which his cattle afterwards browsed. What rendered this almost certain was, that they were in perfect health on the morning of the 20th of October, when they were brought from their pasture; and that the field was free from infection is equally certain, as nine cattle and eight score of sheep were sent to the pasture on the same day on which the thirteen steers left it. These nine cattle remained in it until the 9th of December, and the eight score of sheep until the 16th of January, all of which continued in perfect health, never having been permitted to mix with or come near those that were diseased. . . . The thirteen steers were all seized on the second day after the supposed infection. Seventeen other cattle got among them during the night previous to their

having been observed to be ill, five of which became ill on the second day, six more on the third day, two on the fourth day, and the remaining four on the fifth day. . . . He had about sixty cases of cattle, twenty of pigs, and six hundred sheep. . . . He had only one death among those which were attacked. . . . It had not quite disappeared among the sheep at the beginning of March, 1841, but there were no cases among the cattle and pigs for more than two months before. There were yet more than forty head of cattle and four hundred sheep on the farm which had not been attacked. They had been kept carefully apart from the infected portion of the stock. In conclusion, Mr. Jobson offers it as his firm opinion that the disease is entirely infectious; he had not seen, in the experience which he had had with his own stock, or what he had heard of others, any cause to think otherwise. Whenever the animals have been kept carefully out of the way of diseased ones, or of persons who have been among those which were diseased, they have been free from the complaint.¹

WESTMORELAND.—Mr. Sarginson, V.S., Appleby, on the river Eden, in an excellent account of the epizooty, observes that ‘in 1840-41, it created much causeless fear and anxiety among graziers generally, at its commencement. Many of the druggists, within twenty miles of this place, took advantage of the prevailing excitement, and in several of the provincial papers reported the disease as being one of the most dangerous and fatal maladies that had hitherto appeared; but, at the same time, all of them boasted of their own specific. Many persons were thus induced to resort to foolish but innocent measures, both as preventives and cures, whilst others employed the most dangerous and destructive remedies. Some striking and serious examples of the latter are given. . . . This disease appeared under all circumstances. Neither mild, foggy, rainy, windy, nor frosty weather seemed to exert any influence in either favouring or arresting its progress; nor did it make any distinction of soils or localities, but continued to pursue its course with a steady perseverance until it had

¹ Op. cit. p. 83.

inoculated the whole neighbourhood. It is true that a stock of cattle here and there, and now and then one or two among an infected stock, escaped its attack ; but, generally, the cattle on a farm were all seized by it at nearly the same time ; then the pigs became diseased, and afterwards the sheep.

‘At Low Bridge House, near Kendal, is the residence of R. Fothergill, Esq. The disease was brought to his neighbourhood by the purchase of cattle at Kendal fair, on the 9th of November, 1840. He bought six two-year-old Galloway heifers at that fair, and which were then apparently free from the complaint. On the 14th the first was taken ill. It had a sore mouth, and was lame. On the 20th four others were ill ; and on the 21st the sixth. On the 23rd, and at different times up to the 30th, six Galloway and four shorthorn cows were ill of the complaint. These ten were in a cow-house one-third of a mile from the others, but *were attended to by the same man*. On the 19th of December he bought from the same dealer seven other heifers. They were the last of the lot, and had been at Kendal fair, and, not selling, came back to the same land. Between the fair-day and the 19th of December they had the same complaint, and were nearly well. . . . A flock of thirty Cheviot ewes and a tup took the complaint, being in the field in which the six Galloways were put when brought from Kendal fair. *The shepherd’s dog also suffered in the feet and the mouth*. On the other hand, Mr. Fothergill had cattle and sheep on other parts of the farm that were quite well, having taken care to prevent their being on the same land with the infected ones, or tended by the same shepherd.

‘Mr. R. W. Fisher has also a farm in the neighbourhood of Kendal on which the epidemic made its appearance in the latter part of November. His cattle had not been in communication with any others, but the pasture which they occupied adjoined a public road, along which some infected animals had probably been driven. The heifers were out of doors, and in good condition. He had about forty head of cattle and fifty sheep. Only four of his cattle—three yearling Skye heifers and one old heifer—were attacked. The pre-

caution adopted by him was to house the infected cattle in a building altogether apart from his other stock, and he employed one man to attend to them, who was not permitted to enter the barn, or any other out-house.¹

Mr. Younghusband, of Greystoke, writes: 'On November 20th, 1840, I was sent for to Mr. S. Sewel, of Scale, to give my advice respecting what he termed an obscure disease in a two-year-old heifer. I was at once able, from the accounts I had read in the *Veterinarian*, to pronounce it to be a case of the prevailing epizooty. Mr. S. had purchased a cow a few weeks before that had crossed a road over which some infected beasts had travelled; but whether this was the cause of the disease I am not able to say. . . . From the date of my second visit until the 28th of the same month, more or less of the cattle were affected every day. . . . This person had two good store-pigs, which I strenuously advised him to have killed, as they lay close to one of the affected cow-houses, and in all likelihood would catch the disease. He immediately complied with this advice; and well was it for him that he did, as a fine breeding-sow adjoining caught the disease in the first week, and was ill for nearly three more. In a few days after this the rest of the pigs caught the infection, though not in so severe a degree. . . . The next stock I had to attend belonged to my brother-in-law, Mr. T. Richardson, consisting of about forty cattle. Most of them had the disease in a mild form. . . . One beast, a yearling bull, had it in a most aggravated form, both in the mouth and feet, and, in spite of our best treatment, cast all the horny part of his hoofs. The pigs on this farm were all similarly affected, most of them casting their hoofs. In another farming stock which I attended similar cases were observed.'²

CUMBERLAND.—The only relation concerning the epizooty in this county is from the pen of Mr. Carlisle, veterinary surgeon, of Wigton, in 1841, and is as follows: 'The word "epidemic" applies to any disease more or less general or universal among cattle, sheep, and swine, or even the human being, and which depends on some common cause or peculiar

¹ Op. cit. p. 135.

² Op. cit. p. 615.

state of the atmosphere. Epidemic diseases are doubtless generated by the existence of some peculiar poison or deleterious gas by which the atmosphere becomes contaminated, and which, coming into contact with the blood in the lungs, or through the medium of the common envelope or skin, this fluid is affected or empoisoned by it, and consequently the parts which it supplies become deranged in structure and function. The peculiar state of the atmosphere under which the various epidemics and epizootics occur has never been satisfactorily explained. It is changed in the proportions of its component gases, or empoisoned by miasmata which had escaped from the bowels of the earth, not cognizable by our senses, nor detectable by our ablest chemists. The change is known only by the effects produced on the animal body. Epidemics assume different forms and characters, depending very much on the locality, the predisposition of the animals, and this unknown atmospheric poison. Locality is a great predisposing agent to epidemic diseases. Locality often influences the character of disease, and is the cause of some singular train of symptoms, varying with the soil, pasture, and previous management of the cattle; but the present disease is little influenced by it. It assumes nearly the same character almost universally; it is highly infectious, and also contagious. The disease has been communicated to beasts previously sound by butchers, veterinary surgeons, and the usual attendants on cattle; and it has been propagated by cattle walking on roads where infected ones had previously gone. Its origin, however, is in the atmosphere, and its nature and properties far beyond our comprehension. It may be conveyed from one animal to another by vaccination (inoculation?). I vaccinated nearly one hundred, and the disease seemed very much mitigated. I also vaccinated several horses and dogs with the virus or matter taken from the diseased cattle, but it had not the least effect. It appears, in its present form, to be confined to the cloven-footed animals; yet we have well-authenticated facts of the attendants on these diseased cattle being similarly affected, from having a wound on some external part of the body, with which some

of the matter had come in contact, and produced similar eruptions, or sore throat, and considerable constitutional derangement. . . . The following is a curious and unequivocal fact, that calves newly dropped have had confirmed murrain at the time, clearly proving that they must have imbibed the disease from the parent during utero-gestation. I have witnessed, at the time of birth, every symptom and effect of the disease truly manifested. Cattle, in this part of the country, have done very badly after calving. There is a great tendency to force down the uterus, and it is generally from four to eight days before the placenta comes away. In several cases I was obliged to remove it by manual force. In six cases that came under my treatment the uterus was completely forced down at the time of calving. When practicable, I removed the placenta before reducing or returning the uterus. Three cases took place in one cow-house, and the most remarkable thing was, that the cows were standing all together. I consulted my friend Mr. Relph on the subject, and he informed me that he recollected cases of the same sort. In his opinion it was a species of epidemic, and I am inclined to think that it is connected with or left on the animal by the late epidemic. I am further confirmed in my inference by the following facts: In not less than fifty patients that I was called upon to attend, and all of which had the epidemic, the animals were continually straining, as if they wanted to get rid of some foreign or irritating substance, and continuing to void a great quantity of putrid matter for a length of time. Many that were affected in this way never gave any milk; and others were obliged to go dry from the udder becoming so much affected. May I be permitted to ask what is the rationale of calves showing symptoms of the epidemic at birth? Also, what can be the cause of that lurking, irritable and inflammatory disposition of the uterus after parturition in the cattle previously affected by the epidemic?'¹

BERWICK-UPON-TWEED.—J. S. Donaldson, Selby, gives the following account: The epidemic first made its appearance among his cows and feeding cattle on or about the 20th of

¹ Op. cit. vol. xiv. pp. 189, 332.

December, 1840, and extended to the cattle of all ages, and also to the sheep, and in one case to a pig that was shut up to feed, and to which some of the milk from a diseased cow had been given. The rest of the pigs, to the number of forty, being in the fold-yards, escaped.¹

CORNWALL.—Mr. Karkeek, of Truro, one of the ablest and most scientific veterinary surgeons of his day, to certain questions replies in 1841: ‘I will now endeavour briefly to answer your queries relative to the “epidemic” among cattle, sheep, and pigs in my neighbourhood. It has prevailed chiefly in three or four parishes situated about the centre of the county of Cornwall, and embracing a circuit of nearly fifteen miles. The soil lies on the clay-slate chiefly, and may be considered to be as highly cultivated as any part of the kingdom. Most of the cattle had been housed previous to the attack, and had been feeding on turnips. Previous to the 1st of December, I believe that I am correct in stating that we had not a single case in my district. There may have been some few in the neighbourhood bordering on Devonshire, but I never heard of any. On the 1st of December there was a fair of cattle held at St. Austell, to which several cattle were brought either from Devon or Somerset for sale. These were chiefly purchased by a few farmers; and in about three or four days at the utmost this epidemic was observed in each of the farms to which these strange cattle had been taken. Other cattle that were exposed for sale, and that stood alongside of the eastern cattle in the fair, showed symptoms of the disease about the same time; so that in the course of one week after the fair alluded to the disease had rapidly spread, but still was confined to the cattle on the different farms to which it first was carried. Notwithstanding the utmost precaution was taken by the farmers to prevent this disease from spreading, by prohibiting all persons that had had any communication with infected places from visiting their farm-yards, before the latter part of the month (December) other places became diseased, and in every instance that I know of it never ceased to spread until nearly the whole of the cattle, sheep, and pigs in the

¹ *Op. cit.* vol. xvi. p. 80.

place were infected. There were three very clear cases, for the truth of which I can vouch, in which the disease was carried to the adjoining farms by their owners visiting their neighbours' infected cattle, and then going immediately home and examining their own stock to see if they were still free from the calamity. In one instance of this kind the distance of three miles existed between the farms. The foregoing statement proves the disease to be highly contagious ; and, at the same time, I consider it to be likewise infectious. It is one of those contagious diseases which is communicable both by contact and without it, like small-pox, the matter of which, when brought into direct contact with the body, will produce small-pox ; or when suspended in the air, or coming in contact with the body, is capable of being thus produced. My reason for supposing it to be infectious is in consequence of the great care taken to prevent the disease spreading, yet, in spite of every precaution, whenever it entered a farmyard, whether by positive contact or through the medium of the air, it spread rapidly, until every ox, sheep, and pig was infected. In no instance did I observe the horse attacked ; and yet it was not altogether confined to quadrupeds, since I had one plain and palpable instance of this disease being communicated to the human subject. I heard of two others of a similar kind, but the case I allude to is sufficient for our purpose. It was that of a young farmer, who exhibited every symptom which characterizes the disease. There were the vesicles on the alæ of the nose, at the point, and on the sides ; at the point and dorsum of the tongue, and on the gum of the upper and lower jaw. There was the constant flow of saliva ; the inability to eat and drink anything either hard, or very hot, or very cold. This patient (for I attended him as well as his cattle) is an intimate and particular friend, and I had many opportunities of witnessing the progress of the complaint. He informed me that he was first taken ill with what he called a cold shivering fit about the hour of bedtime ; and believing that he had taken a cold, as he termed it, he drank a posset of treacle and milk. For some hours after, although warmly covered up, the cold fit continued. By the morning this had

left him, and was succeeded by the hot fit. There was a great degree of constitutional disturbance; he had a difficulty of deglutition; his bowels were costive; his nose constantly itching; his tongue and palate dry; and the pulse ranging between 70 and 100, accompanied by great prostration of strength. During the night which succeeded he could get no sleep; the itching of the nose was increased, and sometimes he had sharp and violent pains in the head and face. The next morning there was a discharge of an offensive matter from his nostrils, and for the first time he observed the vesicles on his gums and tongue. On the next day the discharge had assumed a semi-purulent appearance. He afterwards took some mild aperient medicine, and in about a week or ten days was nearly recovered. I have every reason to believe that the disease was communicated to him from having injured one of his fingers in giving a drench to a cow. The wound had a very unhealthy appearance for some time previous to his being attacked as I have described.¹

DEVONSHIRE.—I can find no mention made of the disease in this county until the 2nd of January, 1841, although the accounts of veterinary surgeons and others concur in lending testimony to the supposition that it had been witnessed there previous to that date, and that diseased cattle had been conveyed from it into other counties. Mr. Read, of Crediton, in May, 1841, states: 'It has prevailed on a small farm of my own, distant two miles and a half from Crediton, the town in which I reside. It broke out on the 2nd of January, 1841, attacking five milch-cows, and extending to the sheep and swine. The farm is situate in Sandford, in the county of Devon. . . . The mouths were chiefly infected, and the feet subsequently in the cows; in sheep and pigs the feet were all diseased first, or their being lame first made it observable. . . . Wether sheep and barreners in my locality have all done well under this disease, but most devastating havoc has been made by its malign influence on the progeny of the parturient ewe. At this period of the year (with us the middle of the lambing season) the destructive ravages it has made are almost incal-

¹ The Veterinarian, vol. xiv. p. 151.

culable. One-half of the lambs dropped at present have died from the third or fourth day to as many weeks old. The ewes with the disease lamb well ; and the lambkins seem thriving until the third day, when they begin to droop, and in a few hours are dead. A listlessness comes over them, and a general torpor, and they die in a comatose state, with (in some) an involuntary discharge of fæces and urine a little previously. In numerous cases, where the young animals, when only a few days old, have had the distemper in the feet or mouth, they have done well ; but when the malady has not been externally visible they have died. Mr. Hainwood, of Longbarn, an accurate observer, had a sow that farrowed and brought forth a litter of ten pigs. The sow at their birth had the epizoötic. The little ones sucked, looked well, plump, and glossy, and full of their gambols ; but on the fourth day seven died in a few hours. No premonitory symptoms were observed. On the fifth the remaining three died also. . . . Many calves have died in my neighbourhood from three to ten days old, from sucking their dams while affected with the epizoötic. . . . Out of from one thousand to fifteen hundred head of cattle, none have died. . . .

‘The summer of 1840, from the latter end of February to October, was very dry. As soon as the rain set in, which it did about the beginning of October, the influenza among horses developed itself, although but a few solitary cases had occurred in the interim since the year 1836. The prevailing wind was northerly and easterly ; its course was not regular, but in a varied direction. Miles apart, some intervening stable remained free. In some stables it confined its influence to one or two horses ; in others it ran through the whole. It is remarkable that as soon as the snow mantled the ground, on reference to my statistical record, not a single fresh case occurred, but only from those stables that had been infected with the disease beforehand. From its abruptly ceasing, a fair conclusion may be drawn that the empoisoned emanation, which was capable of exerting its influence on the animal frame, was prevented from commingling with the atmosphere, and the means of infection suspended, and be-

came more concentrated. Now comes the fact, extraordinary as it may appear, that as soon as the snow set in, horses were exempted, and, for the first time in my locality it began to exert its infectious agency on cattle, sheep, and swine as the thaw began, and is now on the increase. Now whether the poison, from being imprisoned by the snow, became more malignant, or acquired any new component constituent, cannot be determined (should such poison be an evolution from the earth); for as soon as the thaw commenced, and it became free, cattle, sheep, and swine were within two or three days attacked. I have here to note another singular incident (but it must be borne in mind that I am confining myself to my own locality, equi-distantly seven miles, as near as I can imagine, from the town in which I reside)—that in those stables and on those farms where the influenza had previously run its course amongst horses, I have not as yet had a single case of the epizoöty with the other stock. On the other hand, on those very identical farms that are now under the disease, and have had the cattle epizoöty, not one single horse has been affected by it.¹

SCOTLAND.—As to when the disease appeared in Scotland there is no detailed account; neither is there any satisfactory description of its progress in that country. Meagre notices of epizoötic visitations in this part of the kingdom are only found at rare intervals, and no care appears to have been taken to record them with accuracy.

For the county of Fife, Mr. Dods, of Kirkaldy, reports: 'It' (the disease) 'made its first appearance in this district in the beginning of December, 1840, but at first confined itself to a small district; the occupiers of these parts having purchased cattle at the annual Edinburgh fair, in the middle of November, for feeding purposes. The first symptom I perceived of it, was the hair slightly roughened and elevated. In eight or ten hours the hair was more erect. In twenty to thirty hours from its first appearance an eruption was observed in the mouth of some cattle, on the feet of others, and many were affected in the mouth, feet, and teats. . . . The disease at

¹ The Veterinarian, vol. xiv. p. 301.

length disappeared for two or three months, and then recommenced late in the spring of the year, when an unusual number of calves were brought to this place from Edinburgh. I cannot say where they were bred. They were principally sold to what are termed hill-farmers, whose living chiefly depends on the breeding and grazing of them. Soon after they had reached these remote places, the disease broke out among the cattle that were at pasture, and continued for a long time. . . . No particular state of the atmosphere seems to influence the disease, either mitigating or aggravating it. It is a contagious disease, but not of an epidemic character. This disease among cattle is of a variolous nature, and resembles small-pox more than any other eruptive disease. . . . I have taken the matter from the teat of a diseased cow, and inserted it into the skin of my hand and arm, and in both cases have produced distinct pustules on them. I have also drunk of their milk, and have fed dogs, puppies, cats, kittens, and pigs with it, without their experiencing any bad effects from it ; but there is always danger after the disease has been upon the cow for thirty hours.’¹

The *Kelso Mail* for 1840, states that the disease was very general among the horned stock, but that the wild cattle in Chillingham Park had entirely escaped.

In an Irish newspaper in 1840 there is the following notice: ‘The epidemic among cattle has continued in England. Pigs as well as horned cattle were attacked. It has also appeared in Scotland.’²

EDINBURGH.—Professor Dick, in a brief letter to the ‘*Veterinarian*,’ dated the 21st of January, 1841, gives a description of the epizooty, which appears to have been witnessed by him in a mild form.³ There is also some correspondence between that gentleman and some practitioners, reported in the same journal, but it gives no indication as to the prevalence of the malady, nor yet of its varying characteristics.⁴

¹ The *Veterinarian*, vol. xvi. p. 378.

³ The *Veterinarian*, vol. xiv. p. 181.

² The *Dublin Freeman’s Journal*.

⁴ *Ibid.* vol. xv. p. 625.

IRELAND.—We have no certain or reliable evidence as to the exact period when the malady was imported into this island. Some writers would lead one to infer that it had been carried from Britain, and others that it was primarily derived from foreign sources, and taken from Ireland to England. Professor Gamgee, for instance, in his evidence before the Cattle Plague Commission in 1865, says, in regard to the foot-and-mouth affection: ‘In the outbreaks of that disease that have been so general over Europe from time to time, it might have come from almost any part. The foot-and-mouth disease of the Continent could have been easily imported; but the first instance that I think we had of it was in some cattle that came from Holland to Cork in 1838. The Consul at the Hague imported some cattle for breeding purposes, and the produce of that stock is still to be traced there; now, perhaps, in the twenty-fifth generation.’¹ In a lecture, however, read before the Royal Dublin Society, in 1862, that gentleman, on referring to the advent of the epizooty, with that of contagious pleuro-pneumonia, gives a different period as the date of their introduction. ‘The province of Munster was the first to be visited by them. It owes this to its ports in the south. I have made careful inquiries on the subject. Prior to the introduction of the new tariff, animals were frequently brought to this country for breeding purposes. A considerable number of Dutch cows were imported into Cork as early as 1839, and this was due to the desire on the part of an Irish gentleman, then minister at the Hague, I believe, to infuse some of the excellent Dutch blood amongst the cattle of Ireland. At that time pleuro-pneumonia and epizootic aphtha were raging abroad. The distillers in the neighbourhood of Rotterdam and Schiedam had carried these diseases to South Holland, and they even passed into Zealand. It is not to be wondered at, then, that our first cargoes of live stock from that port injured us as they did. Through the port of Bristol the west of England was infected by cattle from this country (Ireland), though it is said that the diseases

¹ First Report of the Commissioners on the Cattle Plague, p. 110.

traversed the British Channel, owing to direct intercourse between England, France, and Belgium.¹ In July, 1839, mention is made of an epizooty amongst pigs, cows, and horses at Armagh,² but I cannot find any symptoms recorded, and it is not until 1841 that I am able to fix with certainty on the presence of the malady in Ireland. For March of that year we read: 'The epidemic (among horned cattle) which has for some time been so prevalent in England, has reached this country. It is of a highly contagious nature.'³ And towards the end of April apthous fever was very severe in the vicinity of Ennis, and spread generally among the sheep in County Clare.⁴

A medical gentleman, reporting on typhus fever in Ireland at this time, casually noticed the prevalence of the epizooty, though he confounded it with another of a far more deadly character, and which will be referred to presently. He says: 'It is curious to observe that a disease at this time prevailed amongst horned cattle, pigs, goats, and sheep. It was (I fear from ignorance) dreadfully fatal, and the cause of much distress to numerous poor families. It was a pleuro-pneumonia to all intents and purposes, divisible into two stages—primary and secondary. In the first there was ulceration of the feet, lining membrane of the mouth, nose, etc., with slavering of a frothy saliva; the fauces became swollen, like the strangles in horses. In cows, the teats became inflamed; the lacteal ducts, as a consequence, suffered obliteration, rendering the animal useless as a milker. In the secondary form of the distemper we had inflammations of the pleura and lungs, demanding active sanguineous depletion, followed by purgatives, calomel, tartar emetic, etc.'⁵

The *Irishman* newspaper for April, 1841, indicates the prevalence of the malady in and around Dublin: 'Having had communication from different quarters on the subject of the epidemic which at present prevails to such an alarming extent among the cattle in the city and neighbourhood of Dublin,

¹ The Edinburgh Veterinary Review.

² The Dublin Medical Press.

³ The Irish Farmers' Magazine.

⁴ Ibid.

⁵ G. Jackson. Report of Cork Street Hospital.

and which is likely to spread into the country—and in the remote and distant parts the owners of cattle not having the same opportunities or facilities of obtaining the best advice and medical treatment—I think it would be of much importance that the nature and effects of the disease, and the best modes of treating it, should be as speedily and widely diffused as possible. . . . From what I have seen and heard of the distemper and its symptoms, I have a strong impression that it is neither more nor less than the epidemic murrain which devastated Europe from the beginning to the middle of the eighteenth century, and which has shown itself since at different periods, but in a more gentle and mitigated form. During the last fortnight I have had considerable experience and practice in the matter, for in four days every cow, heifer, and calf in my establishments was attacked ; but I am happy to say that now, at the end of twelve days from the first attack (with the exception of two who are fast recovering) they are all quite well. The first attacks and symptoms were very similar. A few weeks ago the cows were all coughing more or less, which I attributed to a change of house and air, but which I have since found was a precursor of the disease. The next symptoms were loss of appetite and of milk ; a discharge of saliva from the mouth or nostrils, or both ; swelling and great heat of the tongue, throat, palate, and internal parts of the mouth ; a strong disinclination to move, and, when stirred, stiffness of the limbs, and great tenderness of the feet. These symptoms are accompanied by a hard, inflammatory pulse, shivering, and in many cases high fever, and constipation of the bowels. . . . In all cases diluted chloride of lime must be largely used, not only in washing the infected parts, but also in sprinkling the stalls and other parts of the cow-house. Unless this be paid attention to when the disorder is prevalent, and the strictest cleanliness observed, there will be an intolerably offensive smell, the disorder will be prolonged among the sufferers, and the danger of spreading considerably augmented. That it is contagious there can be no doubt ; my cattle all became infected in the order in which they stood.’¹

¹ *The Veterinarian*, vol. xiv. p. 254.

Professor Ferguson, of Dublin, in a lecture delivered in the middle of 1842, on 'The Contagious Pleuro-pneumonia of Cattle,' is the only other writer I can meet with at this time who refers to the invasion. Unfortunately his assertions, like those of Professor Gamgee's, are not supported by proofs. He says: 'A period of nearly three years has elapsed since the first appearance in this country of a peculiar epizooty among horned cattle, the chief characteristic of which was a pustular affection of the mouth, nose, and feet. Previous to being observed in Ireland, it had existed for some short time in the sister island (England), to which, like many epidemic diseases of the human species, it had travelled from the far east by a rather circuitous route, traversing both shores of the Mediterranean, then committing sad devastations among the herds of cattle in Spain, France, Switzerland, Holland, Belgium, Bohemia, Hungary, and Prussia, before it became the unwelcome visitor of the British Islands. Fortunately, this disease was short in its sojourn, mild in its effects, and extremely easy of treatment. . . . Unfortunately, although the pustular disease was so mild in its effects on every description of animal which it attacked (lambs excepted), it was, in all countries which it visited, merely the precursor of one of the most fatal forms of distemper that has been known to exist within the memory of man.'¹

The geographical course pursued by this contagious epizooty in Europe, according to the accounts of the different reporters, is conveniently indicated in the following table :

60°—50° NORTH LATITUDE.

50°—40° NORTH LATITUDE.

50°—40° EAST LONGITUDE.

Podolia, Poland and Hungary (?), commencement of 1838.

40°—30° EAST LONGITUDE.

Pomerania. May, 1838.

Berlin. June, 1838.

Kingdom of Saxony. July, 1838.

Styria. Springtime, 1838.

Bohemia. June, 1838.

Italy, Venice. 1838.

Tuscany. Springtime, 1839.

Naples. Aug. 1839.

¹ *H. Ferguson.* The Present Distemper of Cattle. Dublin, 1842, p. 1.

60°—50° NORTH LATITUDE.

50°—40° NORTH LATITUDE.

30°—20° EAST LONGITUDE.

Magdebourg. End of May, 1838.	Bavaria.
Mersebourg. End of July, 1838.	Franconia. July and Aug. 1838.
Thuringia, Erfurt, Ordurf. July, 1838.	Wurtemberg. Aug. 1838.
Fulda. Aug. 17, 1838.	Geneva. Sept. 1838.
Upper Hesse, Grand Duchy. Sept. 4, 1838.	Alsace. Aug. and Sept. 1838.
Upper Hesse, Electoral. Oct. 10, 1838.	Vosges. Oct. 1838.
Mecklenburg. 1838.	Paris. Dec. 1838.

20°—10° EAST LONGITUDE.

England.—Northampton. March, 1839.	France, Valley of the Auge.
„ Buckinghamshire. May, 1839.	Normandy. Summer, 1839.
„ Norfolk. Nov. 1839.	
„ Kent, Sussex, Worcestershire, Gloucestershire, Cheshire, Huntingdonshire. Feb. 1840.	
„ Essex, Derbyshire, Staffordshire. March, 1840.	
„ Lincolnshire. April, 1840.	Bessin, Normandy. May, 1840.
„ Yorkshire (North and West Ridings). June, 1840.	
„ Lancashire, Nottingham. July, 1840.	
„ Yorkshire (East Riding), Durham. Aug. 1840.	
„ Northumberland. Oct. 1840.	
„ Westmoreland. Nov. 1840.	
„ Cornwall, Berwick-on-Tweed. Dec. 1840.	
„ Devonshire. Jan. 1841.	Quimperlé, Brittany. Jan. 1842.
Scotland.—Fife, Edinburgh. Dec. 1840.	Spain (?).

10°—0° EAST LONGITUDE.

Ireland.—1838 (?). Cork, Armagh. July, 1839 (?).	
„ Dublin, County Clare. April, 1840.	Portugal (?).

There is no evidence to show that any legislative attempt was made to check the progress of the disease ; indeed, it does not seem to have struck our legislators that there was any occasion for a sanitary police, and no one appears to have suggested the necessity for arresting its spread. The introduction, diffusion, and degree of intensity of the malady was doubtless greatly influenced by the trade in foreign cattle, which began soon after the contagion was imported, and by

their unrestricted movement over the country. When it first appeared, its severity varied much in different parts of the country. In some parts of England fatal cases were not of unfrequent occurrence, and its duration was long, cases being oftentimes tedious and troublesome; but at a later period, towards its decline, it became less severe and more rare. In Scotland it never assumed such a formidable character, nor diffused itself so widely, as in the southern parts of the island; indeed, in some districts the malady was exceedingly mild. A slight lameness and tenderness of the mouth was observable for some days, and then the animal was well again. In many such cases the loss of condition was but slight, and was compensated for by the subsequent improvement. After the disease had existed in the country for about two years, its virulence gradually abated, and the number of cases decreased, until little was heard of it for some years.

A.D. 1840. The vegetable kingdom was in a very unhealthy condition this year. In many countries honey-dew and 'albigo' destroyed the crops; and in Germany, as well as in the island of Arran and the Highlands of Scotland generally, potatoes suffered much from blight. In the latter country it lasted from 1839 until 1842, and destroyed at least one-half of the stock of that useful plant. At Berlin, more particularly, the *Botrytis epiphylla* was destructive. Great swarms of the maybug invaded Germany.

The contagious pleuro-pneumonia of cattle was epizoötic in Lithuania.¹ The malady also appeared in the Pas-de-Calais, France. 'This epizoöty has pursued its course with much severity in the Arrondissement of Saint-Omer, whence it came to us (at St. Pierre), as well as to the cantons of Ardres and De-Guines. It was during 1839 that this disease was noticed in its more severe form among cattle in our commune; its ravages increased at the commencement of 1840, especially in those localities lying south of the town, abutting on and communicating with the Boulogne marshes, and therefore low and damp.'²

¹ *Adamowicz*. Magazin für Thierheilkunde, vol. vi.

² *Venquin*. Recueil de Méd. Vétér. vol. xviii.

So serious was the damage caused by the disease, that the attention of the French Government was directed to it. It was then usually designated as the 'peripneumonie contagieuse,' or 'maladie de poitrine du gros bétail.'

'Among the serious and fatal maladies to which cattle are exposed, that of the chest, known by the name of *peripneumony*, occupies a prominent place. Existing from time immemorial in the mountainous countries of Jura, the Vosges, Dauphiny, and among the milch-cows in Paris and its environs, it has within the last ten years spread into most of the departments that are rich in cattle. In most of the localities where considerable traffic in these animals is carried on, whether for milk or for fattening, this disease exists; while in those which are concerned in the exportation of young beasts, as Cotenten, La Vendée, Brittany, and Limousin, peripneumony is unknown. All the departments which furnish our milch-cows, as that of the Seine, the Seine-et-Oise, the Somme, and the north, are a prey to this fearful malady. The beautiful milch-cows of the valley of Bray have not escaped. This rich valley, distant only twenty-five leagues from the capital, and occupying a space of twenty-four leagues in length and five in width, containing more than forty thousand milch-cows, and representing a capital of thirteen million and a half francs, sending to the market butter and cheese and fat cattle to the amount of eight million annually, has of late been, in a manner, devastated by pneumonia. Two thousand beasts, of the value of five hundred thousand francs, have been lost. These disasters, which seemed to compromise the wealth and industry of the inhabitants of Bray, attracted the attention of the Government, and Professor Delafond was sent to the valley to study the disease, to ascertain its character and causes, and to devise the means which may prevent or cure it. He remained more than two months at Bray, and instituted various inquiries, which have led to the most important results; and more particularly has he ascertained that this disease is produced not merely by the influence of local causes, but also by contagion. Before he set out for Normandy he doubted the possibility of this mode of

communication of the disease ; but a great number of facts, well authenticated, have convinced him that the malady may be spread by having sick animals brought near those in good health, both in the stable and at pasture.¹

So early as 1838, M. Mathieu, inspecting veterinary surgeon of the Vosges department, published some valuable remarks on this disease, which he named 'gangrenous peripneumony' and 'pneumo-sarcie.' He stated that it was most frequent and destructive in the mountainous parts of the country, where it was an enzoötic and permanent malady, and that it was only by means of its wonderfully contagious property that it appeared among the cattle of the plains. The symptoms are minutely and exactly given, and the appearances after death faithfully described. The alterations were limited to the chest, the cavity of which usually contained two or three gallons of a thick, yellow, serous fluid, in which were numerous flocculi of lymph ; the pleuræ were covered with false membranes of a yellow-green colour ; the lungs were enlarged and increased in weight ; their tissue solid, marbled and hepatized, and retaining very few portions in which the air-cells, or even the smaller bronchi, could be traced. Besides the mysterious exciting causes of epizoöties, contagion played the chief part in the diffusion of the pestilence, owing to the carelessness in stabling the cattle in crowds during the winter months in badly-ventilated and improper buildings. The severe cold in winter, and the variable climate during the summer, were predisposing, or even exciting causes in this region. The measures recommended to prevent the propagation of the disease were : separating the diseased from the healthy, and appointing different people to attend on them ; abstaining from the sale or purchase of cattle ; avoiding all communication with those who had diseased animals ; deeply burying in remote places those which died, previously slashing the skins ; disinfecting the stables with chloride of

¹ Recueil de Méd. Vétér., September, 1840. For an account of this outbreak and a general sketch of the disease, see *Delafond. Traité sur la Maladie de Poitrine du Gros Bétail, connue sous le nom de Péripleumonie Contagieuse.* Paris, 1844.

lime ; washing the wood-work and utensils with a solution of the same ; and whitewashing the walls with lime.¹

This destructive contagion also prevailed to a serious extent in the Cantons Vaud and Fribourg, Switzerland, from February, 1840, to the same month in 1842. M. de la Harpe, of Lausanne, gives a very good description of it : ‘ In the month of February, 1840, the disease showed itself in the village of Villars-le-Comte, in the neighbourhood of Moudon. Previous to that time it had not been recognised, nor had the authorities been apprised of its existence, partly because the animals were attacked one after another and not simultaneously, and partly because it did not make a decided appearance until several weeks after the animals had become infected. During February many cows fell victims to this malady, and the flayer, or skinner, found in all of them traces of inflammation of the chest. A cow that was sold to a person in Denezy, a neighbouring village, carried the disease thither and died. From that time the disease has prevailed uninterruptedly to the present moment (1842), creeping slowly but fatally from one beast to another, and from one stable to another. The last-named place lost so great a number of cattle, that all the proprietors of stock have resolved to slaughter every animal that exhibited the least symptom of disease, as the only means of putting a stop to the ravages of this insidious foe. The village of Villars-le-Comte was more fortunate, the disease disappearing of its own accord in the month of May. The explanation of this probably may be that the peasants in this poor place rarely had more than one cow each, and this they got rid of as soon as they observed any suspicious appearance about her. A cow from Denezy was, in the month of May, taken to the market at Romond, and there sold to a native of Friburg, who sent her to the Alps for the summer. She was turned out on an elevated mountain meadow in June, where she became ill and died. This excited no suspicion until July, when another cow belonging to the same person, who possessed about eighty head of cattle, also sickened and died.

¹ *H. Mathieu.* Recueil de Méd. Vétér., 1838.

After this the cases of disease and death became so numerous, that information was given to the proper authorities.

‘The first veterinary surgeon who was called in did not recognise the disease. Others, however, who had seen it in the neighbouring country pronounced it to be infectious, and recommended that the whole of the herd should be slaughtered. Fortunately, the mountain was in some degree isolated, and therefore there was reason to hope that the malady was as yet confined to the limits of this person’s property.

‘In September all the animals were slaughtered, except two, one of which had been taken to a neighbouring mountain in July, and the other was led back to the meadow a few days before the slaughter. The former soon became ill and died, but not before it had infected a considerable number of the forty beasts with which it had come in contact, and which herd it soon became necessary to think of destroying. Eventually, through this one animal, one hundred and twenty head of cattle died or were destroyed. On post-mortem examination many of them were found to be badly diseased, though, while alive, they appeared to be in perfect health. The second beast that had been spared was now sought for, and found in a stable among six other cows. The College of Health at Friburg resolved to test the infectiousness or non-infectiousness of this disease. A man therefore was appointed to tend this animal only, and was to approach none of the others. After the lapse of a few weeks the cow next to the suspected beast became ill, and eventually died of inflammation of the chest and lungs. Orders were given immediately to slaughter all the other cows which were in the stable, and it was found that the one that had first been taken ill was exceedingly infected, its next neighbour not so much, and the two that had been farthest off were quite healthy. One of the diseased cows was six months advanced in pregnancy, and the lungs of the foetus had already begun to be diseased.

‘From this period the canton of Friburg began to be regarded as free from contagion, and all quarantine regulations were removed.

‘In October, a cow was found labouring under this disease

in Bulle, a place situated at the foot of the infected mountain. The authorities, having been informed of this, had three other cows belonging to the same stable slaughtered, two of which were already infected. The first of these four animals had been shut up in a stall next to that in which the before-mentioned second of the beasts passed one night on its way from the mountain ; but the two had never come into immediate contact with each other. In the Canton of Waadt the disease seemed to have confined itself to Denezey, if we except the case of a young heifer that had been bought, and, as it seemed wasting away, was slaughtered. It was found to have inflammation of the chest ; but the disease had appeared under such a chronic form that the veterinary surgeon did not believe it to be the contagious malady.

*'Pathological Anatomy.—*1. I am of opinion that the disease is a more or less acute or chronic inflammation of the diaphragm, the pleura, and the prolongations by which they are united to the lobes of the lungs. This inflammation appears, however, soon to pass away from the pleura, and even from every part connected with it, and it is that circumstance which has caused many French veterinary surgeons to be of opinion that it occasionally has its seat only in the lungs, and that the pleura is not at all affected. 2. That the inflammation is not communicated from the pleura to the parietes of the lungs, but to the vessels which run between the prolongations of them, and which are thus obstructed, partly by the coagulation of so much blood in the veins and arteries, and partly by the accumulation of phlegm in the branches of the trachea. 3. That the hepatization and hardening of the texture of the lungs is a consequence of the obstruction of the small vessels of that organ, and hence arises that extraordinary thickening of the parenchyma. 4. That in the larger vessels wherein I have observed the process of obstruction, a small polypus or fibrinous concretion will be found, wherever the inflammation has been more than usually intense. This concretion becomes the focus around which the coagulation extends itself on every side. Each point of adhesion has always a centre of white fibrous matter. The free coagulation is black.

The arteries and veins of the lungs become obstructed in a similar manner. 5. A similar process of coagulation takes place in the bronchi. A white jelly-like coagulation is first of all formed in them, which afterwards gradually hardens into masses. These approach each other by degrees, become still harder, acquire a reddish tint from the admixture of a little exuded blood, obstruct the bronchi, attach themselves to the sides of these, and end by becoming incorporated with them. I am perfectly convinced that this is no plastic exudation of the mucous membrane, for the freshly coagulated matter floats about in the bronchi in cylindrical forms, almost resembling dew-worms.

‘As I have said before, it was on the 8th of October, 1840, that the existence of contagious pleuro-pneumonia was first observed in the village of Denezzy. From that time the strictest regulations were adopted, in order to prevent all communication between the infected animals and those in the neighbourhood and the surrounding districts. About the time of the introduction of these regulations, three cows were killed in one stable, all of which were found to have been infected. A few days afterwards the disease was observed to be breaking out in another stable. Orders were given that all the beasts in it should be slaughtered, and this was done on the 22nd of October. Eight animals were destroyed, and on a post-mortem examination all proved to be infected. On the same day, a cow in a third stable was observed to be ill; it was destroyed on the 19th of November, and found to be affected by the disease; two other beasts in the same stable were also destroyed, and found to be infected. Each stable was thoroughly cleansed, fumigated, and purified, after the animals had been destroyed, and no others were placed in it until the disease subsided. On the 10th December a heifer in a neighbouring village, that three months before had been pastured among some cows at Denezzy, was taken ill, and, on being destroyed, was found to be infected with pleuro-pneumonia. In this animal the disease had assumed quite a chronic form. The lungs were of a whitish-red colour, and the cellular spaces between them were filled with a clear

citron-coloured serum. The bronchi were obstructed by white and red coagulations of blood. The vessels contained very small pale-coloured clots of blood. The stable in which this animal stood was immediately shut up, and still remains so. The contagion spread no farther there. On the 11th of December a cow in a fifth stall was taken ill, and exhibited every symptom of contagious pleuro-pneumonia. On the 22nd and 23rd of December six beasts were destroyed in another stable; and lastly, on the 2nd of January, 1841, another beast, in a seventh stable, was slaughtered, which proved to be diseased. A general slaughter of all the cattle in the village was now ordered; for the uninterrupted progress of the disease and its extension, notwithstanding the utmost care and strictness in following up the police regulations, proved too clearly the necessity for this severe measure. The slaughter was not, however, proceeded with in such haste as not to allow the cattle-owners time to derive some profit from the sale of the meat of those animals that were sound. The diseased ones were all buried. The skins were sent to the tan-pit after having been well prepared with lime.

‘Of the seventy-six beasts which, at the time of the slaughter, belonged to the inhabitants of the village, fifty-one were sound and twenty-five were slightly diseased. Two calves had died a few days previously, but not of pleuro-pneumonia. The cattle-owners received a compensation of three-quarters of the value of a sound animal, and half the value of a diseased one. The stables were after this, without exception, subjected to a thorough purification and fumigation. The plaster was all pulled down, the old wood burnt, and the new washed with chloride of lime; the litter was taken away, everything approaching to putrefaction carefully removed, and the walls washed by means of a fire-engine.

‘Besides the anatomical alterations which I have already described, and which were more or less apparent in every slaughtered beast, the veterinary surgeon who resided at Denczy remarked the following morbid appearances: In many cases the chronic pneumonia was associated with tubercles. In several of the animals the disease was in its first stage, and

then it was found that the parts originally affected were the borders of the diaphragm, the lobes of the lungs, and chiefly the anterior one, the middle and smaller ones being less affected. In other animals, where the disease had made more progress, numerous tubercles were found; these gradually softened, and collections of purulent fluid were then formed. In most of them the pleura was thickly covered with plastic exudations. In a few, wide patches of a brown and blue colour were observed, which corresponded with those parts of the lungs that had suffered most from hepatization. In some cattle the lungs appeared to be larger than they are in healthy animals. The veterinary surgeon also stated that this disease ran its course very slowly, and frequently was not perceptible in the living animal until it had reached its height.

‘I have examined some portions of lung taken from animals that seemed, while living, scarcely at all affected, and found that in all of them the alterations caused by contagious pleuro-pneumonia were more or less apparent. The changes uniformly appeared to be of recent date, and not one showed any trace of previous inflammation of the chest, still less of false membranes. The prolongations between the lobes of the lungs were neither thickened nor filled with serum, as I had previously invariably found them. Around the inflamed parts the bronchi contained polypoid concretions of a whitish-red colour, tinged extremely with blood. These concretions were seldom attached to the mucous membrane. In other parts the bronchi were simply coloured by a fibrinous and bloody mucus. The parenchyma of the diseased parts was marbled, of a dark-red colour, filled with blood, and more or less hepatized. The red spots consisted of patches of a dark red-brown colour (a simple collection of blood, with hepatization), or of bright-red (inflammation and red hepatization), or of rose-colour verging into white (inflammation degenerating into white hepatization). This last species of hepatization appeared to me to be altogether peculiar to contagious pleuro-pneumonia. The blood which passes into the parenchyma of the lungs becomes gradually decomposed, and loses its cor-

puscular and colouring properties ; while the white corpuscles and the fibrine coagulate, remain adhering to the parenchyma, and gradually form a firm white mass. In my opinion the polypi in the bronchi arise from the same cause and in the same manner. Most of the arteries and veins contain blackish clots of blood, here and there tinged with other colours ; these clots are elastic, and not adherent to the sides of the vessels. In one of the lungs the pneumonic disease had assumed a very peculiar character. The collection of blood was diversified by spots of a dark reddish hue, and somewhat resembling ecchymosis, varying in size from that of the head of a pin to a hazel-nut. These spots united themselves at different points, and, in one lobe, covered it completely with a dark-brown mass of hyperæmia. The centre-point of this half-hepatized lung was darker and more compact than any of the rest. This kind of pleuro-pneumonia differed entirely from any that I had previously observed.

‘When the cattle were slaughtered, the farmers and owners requested that orders might also be given to destroy the sheep and goats, and, as this request was seconded by the veterinary surgeon, the authorities granted it as a measure of precaution. Hence I was enabled to examine the lungs of fifteen sheep. Not one of them showed traces of the pleuro-pneumonic change. In one a slight trace of chronic pneumonia, with formation of matter and tubercles, was found. Some contained isolated hard tubercles, which were just beginning to soften. In these latter I found two very extraordinary appearances: First, that the tubercles do not soften, as is commonly believed, but suppurate. Many of them which had reached the size of a pea were carefully cut open. In the centre was found one or more globules of a yellow hue among the greyish-white substance of the tubercle. These globules, when pressed under the finger, turned into a yellow powdery substance resembling hardened matter. Secondly, several of these tubercles, when cut open, were found to contain, not matter, but a small clot of blood, which was lodged in the middle. This clot could be lifted up and taken out on the point of a needle. Most of the tubercles containing this clot

of blood were perfect and uninjured, and adhered firmly to the surrounding tissue.’¹

The verminous affection generally known as the ‘gapes,’ appears to have been epizoötic among poultry, partridges and pheasants, particularly in Somersetshire. ‘It commences by something like an attempt to cough, and this increases until there is a constant gaping for breath in the chickens. For the most part, those that are fat and in high condition are the first attacked; but they are soon cut off, or rapidly dwindle away. On opening them, it is evident that they have been destroyed by worms collected in the windpipe. . . . They stick like leeches to the side of the windpipe, and when they get to a certain size they suffocate the chickens by congregating into a mass . . . the number varying from five to fourteen.’² The poultry in Armagh, Ireland, also died in large numbers in August.³

An epizoöty was ‘very prevalent, and almost in every instance fatal, among pigs in the north of Ireland.’⁴ It was a form of eruptive fever, which in a short time assumed the appearance of measles in the human subject, and finally the whole skin became one universal patch of floridity. The malady also appeared in county Galway.

M. Puissant gives a long description of an epizoöty at Fontainebleau, which appears to have been a subacute form of anthrax, the symptoms and pathological appearances of which are well known. It broke out in September and continued until November, 1840. It chiefly attacked horses that had been watered in ponds into which excreta and filth of every kind had been allowed to drain. Other animals watered from proper wells did not suffer. The horses affected had also been subjected to severe labour.⁵

At Hersfeld, Hesse, Walch observed an epizoötic helminthiasis of the intestinal canal in hogs during November and

¹ *De La Harpe*. *Magazin f. d. Gesammte Thierheilkunde*, 1842, p. 4.

² *The Veterinarian*, vol. xiii. p. 648.

³ *The Irish Farmer's and Gardener's Magazine*.

⁴ *Ibid*.

⁵ *Puissant*. *Recueil de Méd. Vétér.* vol. xix. p. 13.

December. The entozoön (the *Echinorhynchus gigas*) was noted to have perforated the intestine in several instances.¹

The epizootic fever or 'influenza' of horses, noticed in the preceding year, prevailed in Germany, England, and France. In July, Körber observed it at Merseburg, Saxony, among the cavalry horses. His description is interesting.² In England, the malady appears to have shown itself in September, and to have diffused itself like, and exhibited similar symptoms to, the epidemic influenza. Mr. Wotton, of Tiverton, says it was extensively prevalent in that locality, attacking horses at pasture as well as those kept in stables, age making no difference. It was first observed about the middle of September. The weather had been generally wet, the atmosphere close and oppressive; but when frost began to set in the disease rapidly diminished. Some cases he thought were due to contagion, but the majority arose without any assignable cause. The symptoms were: Loss of appetite; soreness and increased heat of the legs; discharge from the eyes, the lids of which rapidly became swollen and inverted; drooping of the head; difficult respiration, with evident obstruction in the frontal sinuses; great œdema of the limbs; small tremulous pulse; unwillingness to move, and attitude like that of a horse in tetanus. These symptoms increased in intensity until the fourth or fifth day, the crisis of the disease. Sometimes there occurred a spontaneous diarrhœa. Vigorous horses suffered no less than those in poor condition, but a second attack was not observed. Not unfrequently there was complete prostration of strong animals within three hours after the earliest symptoms had been noted. Mr. Wotton believed in the existence of an aërial poison.³

Mr. Spooner, Southampton, says it appeared there in September, and continued until February. The symptoms

¹ Walch. Zeitschrift für Thierheilkunde, vol. viii. p. 149.

² Körber. Magazin für die Gesammte Thierheilkunde, vol. vii. pp. 3, 261. It is to be observed that in the preceding year this epizooty was later in showing itself in South than in North Germany, and that it did not appear in England until the autumn of 1840, but in France it commenced earlier.

³ Wotton. The Veterinarian, vol. xiv. p. 92.

were, according to this authority, similar to those of the epizooty of 1836, but with a greater disposition to œdema of the limbs and prepuce. The weather was not supposed to have much influence in its production, but some peculiar atmospheric poison was believed to be the cause, as it continued to prevail during a genial temperature. It was regarded as a fever *sui generis*, in which the mucous membranes were considerably affected, and the nervous system greatly deranged. On the whole, Mr. Spooner believed the disease to be infectious; though the greater proportion of cases were produced by an unknown atmospheric cause.¹

At Foley, Staffordshire, Mr. Hughes saw the disease in October. The earliest symptom was great and sudden prostration, so that if the animal was compelled to travel quickly it would fall; in addition to the symptoms already enumerated, great tenderness was evinced when pressure was made on the abdomen or region of the flank.²

Mr. Raddal, Plymouth, reports, besides the above-mentioned symptoms, spots of ecchymoses on the nasal membranes of some, with a ropy, foetid discharge of saliva. The atmosphere was the cause, and its influence was mainly exerted on the nervous system. A considerable analogy was thought to exist between the disease and typhus fever in the human subject. Local inflammation was only observed in two cases. This writer makes some judicious remarks on the pathology of the malady; and when speaking of its infectiousness, states that he had inoculated five healthy horses with the saliva, tears, blood, etc., of the sick, four of which became affected. In some patients two distinct attacks were witnessed, the second being more severe than the first.³

Mr. Tombs, Pershore, had many cases; it was a milder form of influenza than that of 1836. It generally terminated favourably; though sometimes in blindness, laminitis, and cutaneous eruptions.⁴

Mr. Titchmarsh, Bishop's Stortford, viewed the disease as a general inflammation of the mucous membranes, accompanied

¹ Spooner. *The Veterinarian*, vol. xiv. p. 60.

² Hughes. *Ibid.* p. 73.

³ Raddal. *Ibid.* p. 76.

⁴ Tombs. *Ibid.* p. 80.

by fever of a peculiar nature. 'It is undoubtedly infectious; appears suddenly, while the animal is in apparent good health. . . . The earliest symptoms are: Refusal of food; hurried breathing, differing, however, from that which accompanies inflamed lungs. The sound which is heard as the air passes through the cavities of the head is singularly unnatural. . . . The gait resembles that of a man when under the influence of intoxicating liquor, and the countenance is anxious. . . . The Schneiderian membrane and that lining the mouth and covering the tongue are thickly studded with petechiæ; the breath and fæces are very foetid; sometimes voluntary purgation is present, but this is rare; cough more or less severe, with soreness of throat, and an enlargement of the neighbouring glands, are general concomitants. It is somewhat singular, but, upon an average, six cases out of ten suffer from extreme lameness of the near hind-leg.¹

Mr. Baker, Reigate, observed similar symptoms. The disease was due to some general cause, either originating in or subsisting in the atmosphere, and depending on its sudden changes. 'The spread of this epidemic over the country has been so general, that I cannot believe its rapid propagation could be caused by intercourse.' The horses most liable to the disease were post and coach horses. 'I have known it return on some of those previously affected, and with increased intensity; nor do I consider the bare fact of having been once the subject of its influence or power, in any way secures from a renewal of the attack.'²

Mr. Haycock, Huddersfield, noticed two distinct forms of the malady—a bronchial or nervous, and an œdematous influenza.³

Mr. Mayer, Newcastle-under-Lyne, first saw the epizooty in North Staffordshire about the middle of September; but the largest number of cases occurred during November and December. The weather had no influence upon it. It appeared to be infectious. Sheep were attacked, and presented the same symptoms.⁴

¹ *Titchmarsh.* The Veterinarian, vol. xiv. p. 80.

³ *Haycock.* Ibid. p. 146.

² *Baker.* Ibid. p. 134.

⁴ *Mayer.* Ibid. p. 88.

Mr. Simonds considered it 'a subacute inflammatory affection of the subcutaneous cellular tissue and the mucous membrane, accompanied by a fever *sui generis*, which speedily passes from its active to its typhoid state.'¹

Mr. Read, Crediton, Devonshire, reports in December that within the previous two or three weeks the epizooty had attacked the farm and cart horses. Its type was similar to that of 1836-7. Horses at pasture suffered, but were not more obnoxious to the pest than stabled horses. The summer had been dry, but little rain having fallen since the end of February. 'It is singular that as soon as the rain set in, the influenza with energy developed itself.'²

Mr. Page, Tunbridge Wells, says that the first appearances differed much, some horses appearing to be affected with spasms of the bowels, with a very remarkable twitching of the abdominal muscles; others presenting the ordinary symptoms. In two or three days the legs swelled enormously, and in some cases emitted a very offensive discharge from the heels, especially in cart-horses.³

Mr. Darby, of Louth, Lincolnshire, writes in December, 1841: 'We have had in this neighbourhood, for the last three months, a great deal of influenza; full as much, I think, as in 1836; but the precursory symptoms generally are very different, inasmuch as in this spring a great many of them are taken with an affection of the spinal column, reeling and staggering as though the spine was actually injured, with great swelling of the legs, and extreme prostration of strength. I have had about three hundred cases, and have only lost one, and that from effusion in the chest.'⁴

For Scotland, the *Kelso Mail* in 1840 says: 'The epidemic among horses in this neighbourhood has been very general, and in many cases has terminated fatally.'

In Ireland the epizooty was attentively studied by Professor Ferguson, of Dublin, who has furnished an excellent, though detailed, description. As in England, every kind of horse, whether in stable or depastured, was liable to be affected. It

¹ *Simonds*. The Veterinarian, vol. xiv. p. 92. ² *Read*. Ibid. vol. xiii. p. 702.

³ *Page*. Ibid. vol. xv. p. 560.

⁴ *Darby*. Ibid. vol. xiv. p. 702.

was not believed to be either contagious or infectious, but was due solely to a peculiar atmospherical condition causing derangement of the organic system of nerves, more particularly those which influence the mucous membranes, these in general becoming affected. The symptoms did not differ to any notable extent from those already enumerated. In two cases in which the breathing was stertorous, and which were purposely destroyed, no alterations could be discovered to account for this symptom. One of the most characteristic features of the malady was the rapid prostration of strength, particularly in the hinder extremities.¹

Mr. Price, Cork, observed that the epizoöty in his neighbourhood was very similar to that seen in England in 1835-6.²

In France the disease appears to have been prevalent in the spring of 1840, and M. Delafond, in an able report to the Agricultural Society of the Seine, makes us acquainted with its characteristics in that country: 'There has reigned for two or three months, among the horses in various parts of France, and particularly those in Normandy, Perche, Beauce, and Brie, in the departments of the Seine and the Seine-et-Oise, as well as among the horses of many regiments of cavalry, a disease which has assumed an epizoötic form. This malady, often serious from its very commencement, has up to the present time destroyed a great number of horses in those places where it has been, and is now, violently prevalent. It is of an inflammatory nature, and has its seat either in the lungs or the intestinal canal. It has some resemblance to the epizoötic gastro-enteritis which showed itself among horses in 1825 over the whole of France; but it differs from that disease, inasmuch as it affects not only the intestinal canal, but also the lungs. Those which we have seen attacked by it were for the greater part young and vigorous horses, employed as diligence or post animals. Many came from Perche and Beauce; yet a number affected were carriage and riding horses, and those used for heavy draught. The majority of them were ill during the late hot weather, or since the dimin-

¹ *Ferguson.* The Veterinarian, vol. xiv. p. 241.

² *Price.* Ibid. p. 253.

ished temperature of the last few months. The animals were dull, refused to eat, and would not look at their corn; their skins lost their usual glossy appearance; the head was carried low, and the limbs had not the position or firmness noticeable in horses which are in good health. Some remained lying for a certain time, sighed, and looked towards their belly as if to testify to the intestinal pains they experienced; while others—and these were the greatest in number—stood and pawed the ground with their fore-feet. The eyelids were tumefied, and partially covered the eyes. The palpebral conjunctiva was infiltrated, of a bright-red colour, which soon became a deep-red, and sometimes even a yellowish hue. This last symptom always indicated the gravity of the disease. The mouth was hot, and at times dry; the tongue, without being pasty, was red at its borders and point; the abdomen was often painful on pressure. The loins were insensible, and the excrementitious matters hard and dry. These symptoms indicate inflammation of the intestines, and the following denote pulmonary inflammation: The horse coughs much and painfully, and the cough is either dry or slightly humid; the nostrils are then dry or moist. The respiration is frequent and short; and if the thorax is percussed, it is found to be painful either on the right or the left side. Auscultation reveals a notable feebleness in the respiratory murmur, and a loud, crepitant, humid râle in the localities where inflammation has established itself. The inferior region of the left lung seems to be particularly the seat of peripneumonia. The pulse is small, quick, and soft. Such are the characteristic symptoms by which recent inflammation of the pulmonary tissue may be recognised.

‘The engorgement of the inferior parts of the members, and often of the hocks; the heightened sensibility of one or other of the spermatic cords, especially the left; slight infiltration of the scrotum; weakness in walking—these are the auxiliary pathognomonic symptoms which positively fix the seat of the disease. The beats or sounds of the heart have nothing remarkable. The coagulation, separation, and the serous, fibrinous, or crude proportions of the blood, offer nothing abnormal; the

long hairs are not easily pulled out ; the mucous membranes are not ecchymosed ; in fact, there are no signs to indicate a disease of the blood.

‘ The symptoms I have enumerated persist for two or three days, and if the malady is actively combated by debilitating measures, convalescence soon sets in ; so that in about eight days the horses may resume their usual work. But if the affected receive no attention, the pathological condition changes, and their state becomes alarming. The eyelids are very tumefied ; the conjunctivæ, of a reddish-brown, soon assume the tint of saffron. A whitish circle forms around the transparent cornea, which soon becomes opaque at its circumference ; sometimes the humours of the eye become dim or troubled. The tongue is a bright-red colour at its free margins, and becomes pasty. The abdomen is drawn up ; the respiration very quick, shallow, and short ; and the expired air hot. The cough is very frequent and painful ; there is a complete absence of the pulmonary murmur ; a tubular bruit, a loud, crepitant, humid râle, and perfect dulness on percussion of the thoracic walls, indicating that the inflammatory engorgement of the lungs has passed into a state of hepatization. Then the pulse becomes remarkable by its weakness and quickness ; the tumefaction of the limbs extends to the anus and the thighs, and from the prepuce it gains the belly, so that progression becomes difficult. These symptoms announce the *sumnum* of intensity, or the height of the disease—a stage reached in from five to six days. The symptoms become aggravated from the seventh to the tenth day : the respiration becomes quick, laborious, and suffocative ; the pulse is small, quick, and scarcely perceptible. Soon the animals stagger about, fall down, and quickly die.

‘ Of forty horses which I have treated, both in the hospital of the Alfort College and outside this establishment, three died. Opened before they had become cold, these are the appearances I have noticed : The stomach was healthy ; the intestinal mucous membrane exhibited extended patches of bright red, with thickening and flaccidity of tissue (this was especially noted in the middle and duodenal portions of

the small intestines); the large intestines did not present anything notable. The liver, which in its natural state is brown and not easily torn, was in these three dead animals very large, heavy, and of a yellow colour; its tissue was much injected, and was lacerated with the slightest pressure, permitting a purulent and sanguinolent fluid to escape; its hepatic canals were filled with a thick brownish-black bile. The lungs have exhibited every phase of inflammation: there it was found congested with blood, crepitant, and floating in water; here it was solid, heavy, of a deep-red hue, friable, granular when broken—in a word, hepatized. The bronchi have been found red, injected, and filled with yellow, stringy mucus; their smaller divisions being, above all in the pulmonary portions, hepatized, and gorged with this morbid secretion. The costal, diaphragmatic, and mediastinal pleuræ have not shown any traces of inflammation; only that covering the hepatized lung has been injected.

‘The epizootic disease now reigning among horses appears to me, then, to be either enteritis, pneumonia, or an enteropneumonia. The causes of it cannot be ascribed to the food given to the horses since the late harvest, because the forage has been of good quality, and the disease has attacked the best-fed animals. No more can we seek its etiology in excessive labour; for the horses which work but little have been affected, as well as those in the infirmaries suffering from lameness. I know nothing for certain as to the contagious or non-contagious character of the disease. The hot and damp constitution of the air in March, April, and May, the violent diminutions of temperature alternating, to the present time, with fine days, appear to be the probable, if not the certain, causes of the development of the affection. These general causes, acting on a great number of animals and in many localities, give at least a satisfactory explanation of the epizootic form the disease has assumed.’¹

Professors Bouley and Renault report: ‘During June and July, there appeared in Paris and its environs a disease among horses much resembling that which broke out in 1825. At

¹ *Delafond*. Recueil de Méd. Vétér. vol. xviii. p. 465.

the commencement, the horses were unusually dull, and soon and quickly became altogether dispirited. They hung back in the stable, and could scarcely be induced to touch either solid or liquid food. The conjunctiva was deeply injected; the swollen eyelids covered nearly the whole eye, and by pressure with the fingers allowed a considerable quantity of limpid serosity to escape. The vertebral column was exceedingly tender from the shoulder to the croup; and the animal shrank to the ground if this part was pressed upon. The mouth was clammy and somewhat injected; the pellets of dung were small and dry, or covered with mucus. The respiratory movements were scarcely disturbed, but the circulation was considerably affected, the pulse being hard, and varying from 60 to 70 a minute. Soon afterwards the legs became very much swollen, and the horse walked with considerable difficulty. When some of the sick animals attempted to walk, they appeared as if they had laminitis. Towards the termination of the disease diarrhœa supervened, and then gradually every symptom disappeared. In from ten to fifteen days the majority of the sick were in perfect health. Some, however, had serious complications of pneumonia, which was extensive and obstinate.'

Professor Rey, who saw the disease in the department of the Rhone, alludes to it in the *Compte Rendu* of the Lyons veterinary school: 'In a medical point of view, the meteorological phenomena of this year have been peculiarly interesting, particularly in multiplying those diseases in whose production the hygrometrical state of the atmosphere has so much influence. . . . A malady similar to the epizoöty of 1825 has shown itself in the horse species during the spring and summer of this year; asses and mules have been exempt. In May, June, and July we observed this disease chiefly attacking those horses submitted to the heavy drudgery of drawing public carriages. Those performing slow work, private carriage or farm horses, have been but slightly affected. In the 12th regiment of artillery, it only attacked four horses belonging to officers, and no disease has been observed among the market horses.

‘It has not been possible to observe any greater predisposition in the horses imported from the north than in other horses, the importation being almost nil. The mares have suffered in largest proportion. The causes appear to us to have resided in meteorological phenomena: The exposure to sudden changes of temperature, and the almost constant prevalence of north-west winds; the middling or bad quality of the forage has had no influence; few subjects badly fed have been affected, but in the majority of cases the attacked have been in a satisfactory condition, and fat when first seized. Up to the present time we do not believe in the existence of contagion, but rather in the influence of the same causes on animals submitted to the same régime, to the same labour. In twelve horses working in public vehicles on a hilly road, ten were affected, and one died after a relapse; but this fact did not establish its contagious character. In two establishments having each sixty-five omnibus horses, one had only four sick and the other two, and in such a way that the agglomeration of the animals in the same stables could not be regarded as one of the occasional causes; none have contracted the affection in the hospital of the college.

‘It is, perhaps, well to preserve here the term *gastro-conjunctivitis* which was given by M. Rainard to the gastric fever observed in 1825. Yet most frequently, with the exception of the dryness and the heat of the mouth, the digestive organs appeared to be but little affected; in many cases the sick horses have retained their appetite; the belly was not tense; the dejections showed their ordinary characters; and the gastric phlegmasia has not always predominated. The state of the eyes gives the most striking, and, in many cases, the first observed symptoms; the eyelids are swollen, and the conjunctiva of a red, rarely of a yellow tint. The globe of the eye offers important characters; sometimes the whole of the cornea becomes suddenly opaque and white, as is frequently witnessed in the distemper of young dogs; at other times the cornea, preserving its transparency, permits us to see the limpid aqueous humour, but with a greenish tint, which disappears in a few hours, and from the centre towards the circumference.

In two-thirds of the diseased, symptoms are shown of phlegmasia of the respiratory organs, such as pain in the throat, a frequent and difficult cough, a humid tracheal bruit, discharge by the nostrils of a white semi-transparent mucus; a crepitant râle, etc. The horses which exhibit symptoms of pneumonia cannot lie down, though they move and stand with much difficulty; their pulse is small and wiry; nothing abnormal is noticed in the sounds of the heart; there are no cerebral symptoms, but in general the disease shows itself in a simple form, and ceases in from the fifth to the eighth day. Its termination has been rarely fatal. The Lyonnais veterinarians assure me that none of their patients have succumbed, and perhaps they regard as quite another disease the complication produced by the development of the pulmonary phlegmasia. Out of a hundred sick horses confided to my care, three have perished. Two of these have offered the signs and lesions of pleuro-pneumonia; on opening a third the thoracic organs were found little altered, but floating in some quarts of serosity; in the abdomen, however, the redness of the stomach, the presence of a greyish mucus, the leaden tint of the mucous membrane lining the small intestines, the cæcum, and a portion of the colon, accounted for what was observed during the first days of illness—marked debility; the extremities were swollen to a great size, the scrotum was infiltrated with serum, and an œdematous tumour formed beneath the belly.¹

¹ *Rey.* Recueil de Méd. Vétér. vol. xviii. p. 757.

CHAPTER V.

PERIOD FROM A.D. 1840 TO A.D. 1842.

A.D. 1841. In this and the previous year, glanders prevailed in a peculiarly violent form among the French Military Train horses in Algeria. In 1840, one thousand nine hundred perished out of a strength of two thousand four hundred ; and in this year as many as two thousand were lost.¹ And Mr. Macpherson, writing from Dum Dum, near Calcutta, says that glanders and farcy were very prevalent among the troop-horses, especially in the rainy season. Besides, tubercular deposits in the lungs, abscess, and softening of the ribs were found after death. No case of infection had occurred in the human species.²

Rabies canina was epizootic at Vienna.

In the circle of Bittburg, government of Treves, variola was present in an epizootic form among young hogs.³ In the following year the same malady was observed among hogs at Kissiten, near Bartenstein, Prussia.⁴ In Bohemia, variola ovina was epizootic.⁵

In New Granada, small-pox was very prevalent and fatal in mankind. Quadrumanous animals appear to have suffered from this disease a short time previously. A gentleman travelling through the forests in the province of Veragna, says: 'I left the town of St. Jago, on the western coast, for David, in Chiriqui, a town in the interior, about sixty miles to the north-east (and leeward) of St. Jago. The small-pox was

¹ *Wirth*. Op. cit. p. 419.

² *The Veterinarian*, vol. xiv. p. 439.

³ *Leichter*. *Magazin für Thierheilkunde*, vol. x. p. 112.

⁴ *Ibid.* p. 98.

⁵ *Österreich. Med. Jahrbuch*, 1842, p. 77.

raging with great violence in St. Jago, but there was no appearance of it in David. A few days after my arrival there, taking my customary ride in the forest, which teems with animal life, I was struck by observing one or two sick and apparently dying monkeys on the ground under the trees. The next morning I was struck by the same singular appearance (for it is very unusual to find a wild animal sick; they instinctively hide themselves), and by thinking that I perceived several on the trees, moping or moving about in a very languid and sickly manner. I consequently dismounted and examined two which were on the ground—one dead, and the other apparently dying; and after careful examination, no doubt remained on my mind that they were suffering and had died from small-pox. They presented every evidence of the disease; the pustules were perfectly formed, and in one instance (that of the dying one) the animal was nearly quite blind from the effects. A few days afterwards (I think about four or five days) the first case of small-pox appeared amongst the inhabitants of David, and in the course of a fortnight one-half of the population was stricken.¹

It is a fact that quadrumanous creatures are very susceptible to the spontaneous and artificial transmission of variola, but I am not aware that the disease had as yet been observed in an epizoötic form among these animals, and particularly during its prevalence as an epidemic. Our history has shown that many species of creatures have their special variola, and sometimes in a general manner. The horse has its small-pox—a pustular eruption, attacking the limbs more particularly, though not unfrequently the lips, nostrils, and eyes, and at times manifesting itself in more than one subject. Inoculation with the contents of these pustules or vesicles has given rise to vaccina in the cow, and is capable of affecting mankind. The disease has also been transmitted to other horses by natural infection and by inoculation. Vaccine lymph and the virus of horse-pox have been successfully transplanted to the heels of horses, and these again have yielded a material which, on being transferred to mankind and other creatures, has

¹ *Anderson.* Lectures on Fever. *Medical Times and Gazette*, August 16, 1862.

comported itself like vaccine. The bovine species has been affected with its variola from the very earliest times, and its appearance in an epizootic form, according to some writers, has not been unfrequent. Several observers think it may appear primarily in an epizootic character, but Heusinger and others doubt this, and maintain (1) that variola does not originate in any of the lower animals, but that, when it has shown itself in them, it has been transmitted from the human species; (2) that the variola of one species of animal passes to the other—from man to the inferior creatures, and *vice versâ*.

Trustworthy authorities, however, maintain that vaccina is developed directly in the cow, and can be transmitted by natural contagion and inoculation to animals of the same species, and also by inoculation to other domestic creatures and to mankind. It is a singular circumstance that the predisposition to the *spontaneous* development of the malady in the bovine species should chiefly exist in the female animals, and seldom has been noted in the males, although the latter are susceptible to its influences by inoculation; and that cows which have recently calved are most frequently attacked—probably owing to the determination of blood to the mammary gland, which is the special seat of the eruption. It has been observed that the cow-pox has sometimes been prevalent while small-pox was general in mankind, and instances are recorded of cows having taken the disease by mere contact with the linen of small-pox patients. Distinct vaccine vesicles are also said to have been produced in the cow by inoculating with the matter of human small-pox. But pathological and experimental facts are entirely opposed to the supposed identity of human variola and vaccina.

Though the variolous maladies of the domestic animals, and perhaps even the small-pox of man, were apparently unknown to the Greeks and Romans; and though, after human variola had been fully recognised in Europe for some hundreds of years, that of animals had not been observed; yet in Asia in ancient times, in South America for several centuries, and even among some European nations for a long period, it had been known that the vaccine disease was some-

times communicated to man, and that this infection was a guarantee against an attack of small-pox.¹ In those countries where the camel is domesticated, the 'variola camelina' is not unknown, and for long ages its capability of transmission, accidentally or artificially, to man has been noted.²

¹ Mr. Bruce, a resident at Busliire in 1813, in a communication to the Medical and Physial Society of Bombay, speaks of a disease in Persia which is contracted by such as milk the cattle and sheep, and which was known to be a preventive of small-pox. 'When I was in Bombay, I mentioned that the cow-pox was well-known in Persia to the Eliaats, or wandering tribes. Since my return here, I have made very partieuilar inquiries on this subject among several different tribes, who visit this place in the winter to sell the produce of their flocks. . . . Every Eliaat that I have spoken to on this head, of at least six or seven different tribes, has uniformly told me that the people who are employed to milk the cattle caught a disease, which, after once having had, they were perfectly safe from the small-pox; that this disease was prevalent among the cows, and showed itself particularly on the teats, but it was more prevalent and more frequently caught from the sheep. Now this is a circumstance that has never, I believe, before been known, and of the truth of it I have not the smallest doubt, as the persons of whom I inquired could have no interest in telling me a falsehood. To be more sure on the subject, I made most particular inquiry of a most respectable farmer. . . . This man confirmed everything that the Eliaats had told me; and further said that the disease was very common all over the country, and that his own sheep very often had it. There may be one reason for the Eliaats saying that they caught the infection oftener from the sheep than the cows, which is that most of the butter, ghee, cheese, etc., is made from the sheep's milk, and that the black cattle yield very little, being more used for draught than anything else.'—Transactions of the Literary Society of Bombay, vol. i.

Mr. Gibson, in his Sketch of the Province of Guzerat, published in 1838, mentions the frequency and fatality of variola among the natives, and says that the same disease is at times very fatal among cattle; they become so weak and feverish as to be unable to eat, in consequence of the pustular eruption on the lips, tongue and throat. This malady is frequently referred to and well described in the Transactions of the Medical and Physical Society of Bombay. See also the Medical Times and Gazette for January 13, 1866, p. 45.

² Mr. Mason, who travelled in Kelat, says with regard to camel small-pox: 'In the province of Lus, along the sea-coast south-west of Karachi, of which Beila is the capital, and Sommeeanee the seaport, the milkers of camels affirm that they have a disease called "Photo-shootur." Small-pox in Lus is designated "Photo;" so that "Photo-shootur" implies the small-pox of the camel, which is an eruption on the udder of that animal, not more violent than, and in its pustule similar to, that on the udder of the cow. The camels which are thus affected continue to give milk, which is largely drunk by the inhabitants; but both the men and the women who milk them are invariably seized with a pustular disease, similar to that of the camel's udder on their hands and arms, never extending above the elbows. No one has ever been known to die from this eruption, and the natives themselves remark that those who have had the "Photo-shootur" are uniformly exempt from the small-pox, which is a disease occasionally endemic in the district. Inoculation is known in Lus, the virus being taken from a person labouring with

It has been conclusively shown that goats have their special form of variola ; and the many instances cited of these animals having caught the infection of small-pox from sheep, and the facility with which they became inoculated with vaccine matter, has led to the inference that they might at times suffer from the disease in an epizootic form, which they really do. Röhl admits that the disease in them is excessively rare, and that it may be developed in a direct manner, without previous contamination. It affects the teats, as in the cow ; and the pustules, though smaller, bear a very close resemblance to those observed in that animal.

The variola of pigs (*variola suillæ*) has been known as of frequent occurrence for a long time, and two instances have already been adduced for this year. Viborg¹ mentions its appearing epizootically during epidemics of variola in mankind ; and Reuling² testifies to pigs suffering much from the malady while sheep were affected with variola. Inoculation with the virus of human small-pox is reported to have been successful in the pig.³ The disease more particularly attacks the head, neck, chest, and belly, as well as the inner aspect of the thighs. Although its direct development, without previous contamination, is admitted, yet it would appear that transmission by infection is the most frequent cause. The variola of the pig has been transmitted to man and to the goat. An attack confers immunity.

According to Lullin,⁴ sheep have been infected by the variola of man ; and Toggia⁵ says by the variolæ of other animals. Goats, dogs, and rabbits have been infected by

small-pox, and inserted on the wrist of healthy individuals (children), who, if the operation is successful, which is not always the case, are seized with small-pox not limited to the hand and arm, but general over the body, commonly mild, yet fatal in some cases. Although the inhabitants are aware that "Photo-shootur" is a preventive against small-pox, they do not inoculate with its virus in a manner similar to what they do from the small-pox pustule, which frequently brings on a disease believed by these people to be beyond the power of the native doctors, insomuch that the relatives of the sick proceed to the shrine of some favoured saint, there, by propitiatory offerings, to invoke aid in favour of the disease.'—Transactions of the Medical and Physical Society of Bombay, 1840.

¹ Viborg. Erz. d. Schwein.

² Reuling. Beschreibung von Nordheim.

³ Viborg. Magazin für d. Thierheilkunde, vol. ix. p. 58.

⁴ Lullin. Observations sur les Bêtes à Laine.

⁵ Toggia. Mal de' Buoi.

sheep, and Godine is said to have successfully transplanted the small-pox of man to that animal.

The small-pox of dogs (*variola caninæ*) we have already noticed. It is admitted that it may be developed either directly or as a consequence of contagion, and by the virus of human variola or that of the sheep, but this requires confirmation. One attack confers immunity.

The transmission of the disease from man to the cat has not, I believe, been often reported ; but yet there are one or two striking examples among my notes which would go far to prove that such an accident is possible. For instance, I find that Leigh specially alludes to an occurrence of this kind, in the following terms : ' Before I close my observations on quadrupeds, I thought it not amiss to insert two instances, they being not only unusual, but of great importance. The first is of two persons who, in a small cottage near Bury in Lancashire, died of the small-pox. During the whole of their sickness, two cats for the most part lay upon the same beds with the patients. In a little time after these persons had expired, both the cats fell sick, with the usual symptoms of the small-pox, and regularly proceeded to the state of eruption and maturation, with pustules exactly like those in human-kind ; at last those subsided, and afterwards both the cats died. By this instance it is evident the small-pox is not a distemper peculiar only to human-kind.'¹

That domestic poultry are not exempt from variola, is a very ancient belief ; and it has been imagined that the presence of this malady in the feathered tribes gave rise to the mythical story of the Arabian writers, to the effect that the Ababil birds infected the Abyssinian army with small-pox in A.D. 572. The ancient Egyptians were well aware that geese suffered from epizoötic diseases, but they did not seem to have been cognisant of the fact that pigeons were ever diseased. The wealthier classes were extremely fond of goose flesh, which they thought the most delicate of all other kinds ; but as soon as an epizoöty showed itself among the geese, that

¹ Leigh. Natural History of Lancashire, Cheshire and the Peak. Oxford, 1700, part ii. p. 7.

of pigeons only was consumed, as they were considered the purest and never liable to disease, even when all other creatures were suffering. Horapollo¹ is the authority for this statement, and Frank,² in quoting his words, adds, that probably in Egypt at that time, pigeons were not affected with a *kind of small-pox*, as they are nowadays with us. Heusinger thinks that if in Ancient Egypt this disease of pigeons was unknown, whereas it is now common in every country, especially in warm regions, it would be a most important fact in the history of disease. Elsewhere we have spoken of the variolous affections of birds.³

In this and the succeeding year two curious instances of disease are recorded, arising, it would seem, from the effects of the honeydew and mildew⁴ of plants, and which affected

¹ *Horapollonis*. Hieroglyphics, vol. i. p. 57. ² *Frank*. System. d. Med. Poliz.

³ For further details on this very interesting subject, see my treatise, 'Human and Animal Variolæ: A Study in Comparative Pathology,' London, 1881.

⁴ The term 'mildew' is one often, very often, found in connection with the subject of famine and disease, and, therefore, of some interest to the student of epidemic and epizootic visitations. Mr. Cooke's popular treatise on the 'Microscopic Fungi' affords us some excellent observations on the proper meaning and limits of the term. He says: 'Four diseases in wheat of fungal origin are known and recognised in the popular language of the farm as "mildew," "rust," "smut" and "bunt." Sometimes one and sometimes another is most prevalent, and he is an exceedingly fortunate individual who can walk through his fields and find only one of them, especially if that one should be sparingly distributed. It has been our good fortune to dwell much amongst corn-fields, and the terror of the word "mildew" to a farmer's ears is not unfamiliar in our reminiscences of the past. . . . Mildew is just one of those loose terms which represent no definite idea, or a very different one to different individuals. Talk of *mildew* to a farmer, and instantly he scampers mentally over his fields of standing corn in search of the brown lines or irregular spots which indicate the unwelcome presence of *Puccinia graminis*, known to him, and to generations of farmers before him, as "mildew." Try to convince a Norfolk farmer that anything else is "mildew," and he will consider you insane for your pains. Speak of *mildew* in your own domestic circle, and inquire of wives, or daughters, or servants what it means, and without hesitation another, and even more minute species of fungus, which attacks damp linen, will be indicated as the true mildew, to the exclusion of all others, and with equal claims to antiquity. Go to Farnham, or any other hop-growing district, and repeat there your question—What is *mildew*?—and there is every probability that you will be told that it is a kind of mould which attacks the hop plant, but which differs as much from both the mildew of the farmer and the laundry-maid, as they differ from each other. The vine-grower has his mildew, the gardener his mildewed onions, the stationer his mildewed paper from damp cellars, the plasterer his mildewed walls; and in almost every calling or sphere in life, wherever a minute fungus commits its ravages upon stock,

more particularly the white skins of horses. Both observations are reported from Germany. H. Steiner, of Gumbinnen,

crop, or chattels, to that individual owner it becomes a bugbear under the name of "mildew." Here it must be limited in its application to the "mildew of corn," known to botanists as *Puccinia graminis*, and *not* to include the numerous other microscopic fungi to which the name of *mildew* is often applied. The origin of this term and its true application may undoubtedly be traced to *mehl-thau*, "meal dew." A singular proof of the ignorance which prevails in regard to all the fungal diseases of corn, may be found in the fact that at least one of our best etymological dictionaries states that the *mildew* in corn is the same as the *ergot* of the French. Had the writer ever been a farmer, he would have known the difference; had he ever seen the two, he could scarcely have made such a mistake. How long this disease has been known is an unsolved problem. About the middle of the last century a tract was published on this subject in Italy, but this was probably not even the first intimation of its fungoid character. Before such conclusion had been arrived at, men may have struggled in the dark, through many generations, to account for a phenomenon with which they were doubtless familiar in its effects. . . . With a view to the clearer understanding of these parasites in the phases of their development, let us select one, and we cannot do better than adhere to that of the wheat and other graminaceous plants. . . . Having reached the field, it may be premised that a walk into it of less than twenty yards will be sure to reward you with the fungus we are in quest of. Look down at the green leaves, especially the lower ones, and you will soon find one apparently grown rusty. The surface appears to be sprinkled with powdered red ochre, and grown sickly under the operation. The cuticle is traversed with numerous longitudinal cracks or fissures, within which, and about their margins, you discern an orange powder, to which the rusty appearance of the leaf is due. Further examination reveals also portions in which the cuticle is distended into yellowish elongated pustules, not yet ruptured, and which is an earlier stage of the same disease. This is the "rust" of the agriculturist, the *Trichobasis rubigo-vera* of botanists, the first phase of the corn-mildew. . . . The vegetative system of the "rust," and similar fungi, consists of a number of delicate, simple, or branched threads, often intertwining and anastomosing, or uniting one to the other by means of lateral branchlets. These threads, termed the mycelium, penetrate the intercellular spaces, and insinuate themselves in a complete network, amongst the cells of which the leaf or other diseased portion of the plant is composed. We may regard the whole mycelium of one pustule, or spore-spot, as the vegetative system of one fungal plant. At first this mycelium might have originated in a number of individuals, which afterwards became confluent and combined into one for the production of fruit, that is to say, an indefinite number of points in the vicinity of the future mycelium developed threads; and these, in the process of growth, interlaced each other, and ultimately, by means of transverse processes, became united into one vegetative system, in which the individuality of each of the elementary threads became absorbed, and by one combined effort a spore-spot, or cluster of fruit, was produced. In the first instance a number of minute, transparent, colourless cells are developed from the mycelium: these enlarge, become filled with an orange-coloured endochrome, and appear beneath the cuticle of the leaf as yellowish spots. As a consequence of this increase in bulk, the cuticle becomes distended in the form of a pustule, over the yellow cells, and at length, unable longer to withstand the pressure from beneath,

says that the disease in question was general in that district, and in a part of the districts of Insternburg and

ruptures in irregular, more or less elongated fissures, and the yellow bodies, now termed *spores* (whether correctly so, we do not at present inquire), break from their short pedicels and escape, to the naked eye presenting the appearance of an orange or rust-coloured powder. In this stage the spores are globose, or nearly so, and consist of but one cell. A month or two later in the season, rusty leaves and leaf-sheaths have become even more common than before. A little careful examination, and, here and there, we shall find a leaf or two with decidedly brown pustules intermixed with the rusty ones, or, as we have observed several times during the past autumn, the pustules towards the apex reddish brown. If we remove from the browner spots a little of the powder, by means of a sharp-pointed knife, and place it in a drop of water or alcohol on a glass slide, and after covering with a thin square of glass, submit it to examination under a quarter-inch objective, a different series of forms will be observed. There will still be a proportion of sub-globose, one-celled, yellow spores; but the majority will be elongated, most with pedicels or stalks, if they have been carefully removed from the leaf, and either decidedly two-celled, or with an evident tendency to become so. The two cells are separated by a partition or dissepiment, which divides the original cell transversely into an upper and lower cell, with an external constriction in the plane of the dissepiment. These bilocular or two-celled spores are those of the "corn-mildew" (*Puccinia graminis*), which may be produced in the same pustules, and from the same mycelium as the "corn-rust," but which some mycologists consider to be a distinct fungus, others only a modification or stage of the same fungus. When the corn is nearly or fully ripe, or when looking over any bundle of straw, we shall find blackish spots, from the size of a pin's head to an inch in length, mostly on the sheaths of the leaves, often on the culm itself. This is the fully-developed *mildew*, and when once seen is not likely afterwards to be confounded with any other parasite on straw. The closely-packed tufts or masses of spores, when examined with a common lens, seem at first to resemble the minute sorus of some species of fern; but when seen with higher powers, the apparent resemblance gives place to something very different. The tufts consist of multitudes of stalked bodies, termed spores, which are constricted in the middle and narrowed towards either extremity. The partition or septum, thrown across the spore at the constriction, separates it into two portions, each of which consists of a cell-wall enclosing an inner vesicle filled with the endochrome or granular contents, in which a nucleus may often be made out. This species of *Puccinia* is very common on all the cereals cultivated in this country, and on many of the grasses. There is no doubt in the minds of agriculturists, botanists, *savants*, and farm-labourers, that the mildew is very injurious to the corn crop. Different opinions may exist as to how the plants become inoculated, or how infection may be prevented or cured. Some have professed to believe that the spores, such as we have seen produced in clusters on wheat-straw, enter by the stomata, or pores, of the growing plant, "and at the bottom of the hollows to which they lead they germinate and push their minute roots into the cellular texture." Such an explanation, however plausible at first sight, fails on examination, from the fact that the spores are too large to find ingress by such minute openings. It is improbable that the *spores* enter the growing plant at all. The granular contents of the spores may effect an entrance either through the roots or by the stomata, or the globose bodies produced

Stallupöhen, on the north-east declivities of the valleys which extend from Jurgeitschen by Morgallen to Goldapp, and exactly terminating with these declivities. Without any other precursory symptoms, and without any febrile indications, the white spots and patches on the skins of horses became swollen, hot, and painful, and in two or three days were concealed by a dry coriaceous scab, which in a short time became removed by suppuration. This gangrene of the skin was always rigidly limited to the white portions, and marked out by the contour of these, without ever extending to integument of any other colour. When two piebald horses had lost pieces of skin to the extent of some square feet, irritative fever showed itself to a high degree during the process of suppuration. In general the disease was always benignant, and terminated in complete recovery. The cause Mr. Steiner found to reside in the vetches, which were entirely covered with honeydew, mildew, and aphides, and were entirely destroyed over a wide extent of country. The malady

upon the germination of the spores may be the primary cause of infection. We are not aware that this question has been satisfactorily determined. It is worthy of remembrance by all persons interested in the growth of corn, that the mildew is most common upon plants growing on the site of an old dunghill, or on very rich soil. As the same *Puccinia* is also to be found on numerous grasses, no prudent farmer will permit these to luxuriate around the borders of his fields, lest they should serve to introduce or increase the pest he so much dreads. The germination of the spores of the corn-mildew is a very interesting and instructive process, which may be observed with very little trouble. If the spores be scraped from the sori of the preceding year, and kept for a short time in a damp atmosphere under a glass receiver, minute colourless threads will be seen to issue both from the upper and lower divisions of the spores. These will attain a length several times that of the spores from whence they spring. The extremities of these threads ultimately thicken, and two or three septæ are formed across each, dividing it into cells, in which a little orange-coloured endochrome accumulates. From the walls of each of these cells, or joints, a small pedicel, or spicule, is produced outwards, the tip of which gradually swells until a spherical head is formed, into which the orange-coloured fluid passes from the extremities of the threads. A quantity of such threads, bearing at their summits from one to four of these orange-coloured, spherical, secondary fruits, form a beautiful as well as interesting object for the microscope. When matured, these globose bodies, which Tulasne has called *Sporidia*, fall from the threads, and commence germinating on their own account. It is not impossible that the sporidia, in this and allied genera, may themselves produce a third and still more minute fruit, capable of diffusion through the tissues of growing plants, or gaining admission by their stomata. Nothing of the kind, however, has yet been of certainty discovered.'—P. 46 *et seq.*

soon manifested itself after the use of these vetches, beginning about the month of June, 1841, and becoming more and more general until the middle of July, when it had attained its greatest extension. At this time very few horses were seen with white, spotted, or flecked skins which were not suffering from the epizoöty ; all had received these vetches as food, and where the author saw an animal unaffected, he was certain on inquiry to be informed that it had not been allowed any of this forage, or that it came from the other side of these valleys. About the middle of July, nearly the whole of the vetch-fields in the country of Gumbinnen were destroyed, and the small portion which escaped entire devastation had been washed by a shower of rain. The farmers were fully aware of the connection between the diseased vetches and the outbreak among their horses, and when they ceased to give this food the affection disappeared entirely ; though at the end of September there were yet many horses whose skins had not quite recovered from the strange influence.¹

H. Schrebe, of Stralsund, in the same volume says : 'I have had occasion to observe, in the months of June, July, and August of the past year, the disease described by Mr. Steiner, but it was accompanied by other phenomena besides those mentioned by him. The malady always appeared without any precursory signs, but with the symptoms of slight catarrhal fever. It attacked many horses at the same time, and in a few days had spread to all the horses ; only those of a dark colour, and without white patches, were exempt. After this time, no more piebald horses or heads with white spots were observed until after desquamation of the epidermis by the suppurating wounds. The course of the disease was as follows : The horses became dull, did not eat ; the hair became erect, and the pulse a little quickened ; nothing was observed either in the functions of respiration or digestion ; the interior of the mouth at the commencement was hot but moist, and the mucous membrane lining the nostrils was in a normal state. Twenty-four or thirty-six hours after the commencement of the disease, it was observed that on the inner surface

¹ Magazin für d. Thierheilkunde, vol. ix. p. 53.

of the lips, the cheeks, and above all on the tongue, small transparent vesicles had formed, which soon coalesced—without covering a large extent of surface, however, but only in small groups. The mucous membrane in these places became detached in a short time, and left the muscular structures exposed; neither the mucous nor salivary secretions were augmented. About the same time that these phenomena were observed, the eyelids became intensely inflamed; they were tumefied, hot, the conjunctivæ gorged with blood; the secretion of tears was abundant until a little later, when it ceased; the eyes were closed. Then the inflammation extended to the bulb of the eye; the transparent cornea became opaque, and presented a dull-blue colour. In the pastures horses so affected remained in one corner without seeking to move, seemed afraid of the sun, and often fell down. The two eyes were always affected at the same time. On the limbs which were covered with a white skin, this became hot, swollen, tense, and painful, and the hair grew rough and bristly. After some days the white patches became wrinkled, and became detached by degrees, until it reached the darker shade of skin; the margins curled up, and the flakes at last fell off, leaving exposed a healthy suppurating surface; these places healed up in a very short time, and the lost hair became regenerated. This gangrene was always limited to the white portions, and never surpassed their boundaries; but it did not spare the smallest white spot, neither on the limbs nor yet on any other part of the body. White horses suffered considerably from the disease, but the ophthalmia was less intense. Other coloured horses without any white did not suffer from this skin malady, but the inflammation of the eyes was more severe in them. The disease was always benignant and curable in a brief period, without any ill consequences. It only appeared where the horses were confined to pastures, which were very bare this year, and received green forage, especially vetches, which were entirely covered with mildew and aphides, rendering them quite black.¹

¹ Magazin für d. Thierheilkunde, vol. ix. p. 479. This gangrene of the white skin has been sometimes observed in cattle, and probably from the same cause. It is an old

A similar occurrence appears to have taken place at Anclam in this year (1842).¹

The influenza or typhus of horses continued in this and the two succeeding years, particularly in France and England. In Germany it yet lingered, and several veterinary surgeons have more or less carefully described it. Hilmer, for example, observed it at Stade among cavalry horses. 'In April, 1841, nervous diseases again appeared among the cavalry horses in the barracks of this place ; among these diseases I include all complicated appearances of a feverish condition which seem to me to be due, primarily, to nervous disturbance, and which I briefly generalize as nervous fever, no matter in what way or to what extent the circulatory system may be thereby sympathetically affected. According to my own experience, we must regard nervous fever among horses either as being a purely nervous disease—which is very seldom the case—or as a general malady that cannot be identified as affecting any particular organ, although in this case it is quite as dangerous. The reason that the old horses were especially attacked at this late manifestation of the epizooty, was probably because they were hard-worked ; while the five-year-old horses were nearly all gently ridden. Besides, the latter were nearly all in

observation confirmed over and over again in modern times, that when plants are much mildewy bees have dysentery. Heusinger remarks that this affection of white-skinned horses has some analogy with the action of certain vegetables which have an influence on white animals, but none on black. Spinola, for example, among other authors ('*Krankheiten der Schweine*,' p. 237), asserts that buckwheat causes vertigo in white or white-spotted swine, but not in black. Fuchs ('*Pathologie*,' p. 145) confirms this observation, and adds what is familiar enough in our own country, that the sun inflames the white skins of these creatures. One of the most singular effects of this kind is that produced by the *hypericum crispum*, or 'fumulo' in Sicily and Naples on the white-wooled sheep. When these have grazed upon or only touched this plant, an acrid juice secreted by its glands causes so much irritation about their faces that to relieve it they rub them against their wool, which quickly falls off ; then their heads begin to swell and they die in about two weeks ('*Cyrillo. Fundam. Bot.*' p. 125). Marinasci de Martina (*Atti del r. Inst. d'Incorrag.* ii. p. 377) testifies to these facts, and assures us that such accidents never happen to black sheep, and hence it is that only this coloured animal is reared in the districts where the *hypericum crispum* is common. Meuni di Lecce (*ibid.* p. 322) says that the fumulo only has this action when it grows in lowlands, and this is the reason why black sheep alone are bred in Tarentinno.

¹ *Burmeister.* Op. cit. vol. x. p. 112.

the Artillery Barracks, where, on this occasion, there were no cases of the disease. The visible symptoms indicated, for the most part, affections of the lungs and liver. According to my observations, as I shall show hereafter, one can discover nothing from nervous manifestations; there may be inflammation of the lungs, or only fancied symptoms of inflammation present; for the same signs of inflammation of these organs, or a secondary inflamed condition of their tissue, may be ascribed to an affection of the nerves; hence I designate these doubtful cases only affections of the lungs or chest. . . . A horse was seized with symptoms of inflammation of the lungs in a mild form, and after he had apparently made some progress towards recovery, he had slight attacks of colic, followed by paralysis of the posterior extremities, and soon died. The examination did not discover any organic disease which could in the slightest degree have caused death. This case led me to suspect the symptoms; to hesitate before pronouncing the existence of inflammation as certain, or to regard nervous fever as dependent on, or due to inflammation.

‘In the middle of May, in the same year, four and five years old horses entered the barracks as remounts, and, within the first eight days, symptoms of the nervous fever appeared, the result of which was very disastrous, as six fell victims to it. At this early period, the disease had also suddenly broken out in Hanover and Celle. . . . The only indications of inflammation which sometimes appear in very severe cases of pneumonia, and from which horses may die, proved in these instances to be fictitious, since the lungs were always in a normal condition.¹ . . . When, as often happens, local affections accompany nervous fever, these generally involve the principal organs—the brain, and those in the chest and abdomen—and but rarely attack the cutaneous surface. Notwithstanding this, one should carefully avoid

¹ Heusinger observes that if the stethoscope be not used, there is a liability to commit the same error in the typhus of man accompanied by paralysis or typhic affection of the nerves of the lungs, and even with the stethoscope it is sometimes rather difficult to distinguish this typhic bruit from the crepitant râle.

treating apparent symptoms of inflammation by blood-letting ; for, as before mentioned, such symptoms may be present when there is no real inflammation in existence, but only simple nervous disorder. I think this fact is of great importance, and should incite us to distinguish more carefully between symptoms of nervous derangement and real inflammation, a distinction I have not yet succeeded in making. . . . At the same time, I observe that dangerous sickness in a horse is often indicated by the state of the blood after blood-letting. Such blood lacks the proper element or spirit of life (*lebensgeist*), or whatever it may be termed, and actually shows an approach to, or even the presence of, decomposition in its mass. I would willingly believe that the horses which died under my care were in great danger ; but I look upon it as quite certain that I helped them to their death by blood-letting.¹ Horses which appeared to be only slightly unwell, and whose blood flowed badly and was of a dark colour, were afterwards so dreadfully prostrated by this bleeding, as to be unable to rally. . . . It is easily seen what a totally different disease the horse plague (*pferdseuche*) is, and which becomes all the more perplexing as horses succumb in different stages of the malady. Yet I have reasons for saying that my lost patients here had fallen into the torpid state at the commencement of the fever, and that this condition is not necessarily a consequence of an advanced stage of the disease.'²

As already noticed, the disease appeared elsewhere in Germany, and some of the reports are particularly valuable. Among these is one by H. Tetzlaff, of Bärenklau, which deserves some allusion. Speaking of its nature, he says : ' After many years' close and attentive observation of this disease, I am persuaded that it is contagious, and chiefly prevalent

¹ It is worthy of remark how, at this period, veterinary surgeons were beginning to change their view with regard to the propriety of blood-letting in many diseases, and how their treatment of such maladies as that now under consideration was becoming modified, or rather altered, to the rational therapeutic measures of nowadays. In this respect they were much in advance of the healers of mankind, who, until a recent period, continued to employ depletive remedies in this class of affections, notwithstanding their obviously disastrous effects.

² *Hilmer*. Zeitschrift für die Gesammte Thierheilkunde, vol. x. p. 1.

during the autumns succeeding cold wet summers, or at times when the electricity of the atmosphere causes the formation of thick fogs. It rages most in stables where many horses are kept together. Young horses, from three to six years old, are more liable to its attacks than old ones, but the latter do not wholly escape. Very strong constitutioned animals, and such as have no predisposition to this disease, are spared. Traces or isolated appearances of this disease are to be met in all seasons, but chiefly in autumn; and then it principally attacks horses that, from some cause or other, have been very much confined to their stables. I do not mean to say that those which are only brought into the stable at night, or even those which are left out in the meadows, escape; for such is not the case, although instances of horses that live constantly in the open air being attacked with influenza are rarely heard of. I have seen this disease prevail to a frightful extent among cavalry horses while in the barracks or dépôts, but it rarely appears among troops while on the march, or among those horses in barracks that are regularly turned out during a certain portion of the day. It is only where a great number of horses are confined together in stables, from morning until night, that its ravages are so serious. The air in such stables becomes heavy with animal emanations, especially where the horses are only taken out for a short time now and then. In such stables there are seldom any means of obtaining a regular change of air, and the animals constantly inhale the floating miasma, and its poisonous influence becomes manifest in the development of influenza.

In the beginning of October, 1841, seventy-six cavalry horses were delivered at the barrack dépôt, at Bärenklau, where the influenza was at that time raging frightfully. There were three troops then at the dépôt, and among these the horses were equally divided, twenty-six being reserved for Bärenklau. These latter were turned out into a large meadow a quarter of a mile distant from the winter quarters, and were treated exactly the same as the animals which had been previously there. Although only fourteen days before the

disease had broken out among the numerous horses assembled there, and even spread to the winter quarters and the straw-yard, and attacked sixteen ponies which stood in a dark stable—notwithstanding all this, these twenty-six cavalry horses escaped; while those divided among the troops, and the greater part of those which had been there previously, suffered severely from influenza. What is still more remarkable is that at the same time no other horse was suffering from influenza in the whole of the neighbourhood; hence the disease could not have been brought into the dépôt in that manner, and must have arisen from the inhalation of the miasma of which I have before spoken, and which I consider to be one of the chief predisposing and exciting causes of influenza.’¹

In France, MM. Damalix and Reynal, of the 1st regiment of Lancers, have observed and described the influenza for this year: ‘Notwithstanding the unfavourable circumstances in which the regiment had been placed for six months, its sanitary condition was generally satisfactory until the 15th of March, 1841. At that period it was all at once disturbed by the appearance of a grave malady, which chiefly attacked the young horses newly joined from the remount dépôt of Saint-Avoid. This affection, whose analogue we do not know in the records of science, bore sometimes the characteristics of an acute dysenteric enteritis, complicated with putrid tendencies; and at other times it appeared as a typhoid fever. In both forms its course was so rapid that death ensued, even before there was time to adopt remedial measures. It was marked by the following symptoms: General uneasiness, great anxiety, troubled expression, the eyes fixed and prominent, the ears immovable, a comatose state, blackish patches on the conjunctiva and the pituitary membrane, the pulse small and soft, the beats of the heart strong and precipitous, the respiration slow, insensibility of the loins, great loathing of alimentary substances. With four horses there was extreme difficulty in the act of defecation, and frequent though vain attempts to effect it were made; the passage of stercoral matters was

¹ *Tetzlaff*. *Magazin für die Gesamnte Thierheilkunde*, 1843.

preceded and followed by the disengagement of gas and the expulsion of a liquid substance, sometimes greyish in colour, sometimes muco-purulent, and having a very bad odour. Frequent borborygmus; the sphincter ani continually relaxed, and the anus in a constant movement out and in; a burning heat in the rectum, which is largely dilated. In the brief space of six hours these symptoms had reached their last stage. Then set in a new series of morbid phenomena, whose yet more rapid course only terminated in death. All the depending parts of the body became engorged; local œdemas were formed on the prepuce, under the belly, the chest, on the limbs, and in the intermaxillary space. These engorgements always became augmented in volume; two hours were sufficient to allow them to acquire a thickness of several inches, and often in this time they became suddenly gangrenous—a change characterized by the effusion of a reddish-coloured and bloody liquid through the skin; under the hair and the epidermis, which could be removed by the slightest friction, there was remarked now a livid, yellowish, or greenish tint, now a black or blueish hue, and at other times the greyish and violet colour peculiar to an organ which has ceased to live. Local as was this gangrene, it was not slow to affect the whole economy: the blood, even in the interior of the vessels, was struck by death in consequence of its coming in contact with new morbid products. (In our most minute researches on the alterations of the blood, we believe that in one instance only we have found pus mixed with the circulating fluid; notwithstanding this, we still held it doubtful, until new observations permitted us to see easily pus-globules through a glass.) Arrived at this phase, the affection changed its physiognomy: it assumed the form of those putrid fevers which destroy animals in the course of a few hours. In five horses the symptoms of dysentery were not remarked. All the changes were due to a veritable typhoid decomposition of the blood, announced by the black tint of the conjunctiva and of the pituitary membrane; the blue colour of the tongue, the prostration of strength, the smallness of the pulse and the softness of the vessel, and the quick beatings of the heart. In

the space of from five to six hours there appeared the œdematous engorgements under the belly and chest, and, what is worthy of remark, these had an upward tendency; that is to say, they proceeded from below to above, reaching the breast, the shoulders, the upper parts of the sides, and the flanks. They never got below the knees or the hocks. After remaining about seven or eight hours their progress became rapid, and they acquired enormous dimensions; a bistoury could be inserted into them up to the handle without the animal's testifying any signs of pain. Soon the hair became damp, and the epidermis was detached without difficulty; the swellings acquired the characters already mentioned; the horses lay down and succumbed to the disease in about from twelve to fifteen hours, with a calmness which contrasted strangely with the rapidity of the disease. The blood showed certain signs of alteration: it circulated slowly in the interior of its vessels; a large opening made in the jugular vein only permitted the escape of a small quantity, and it often happened that bleeding was impossible. The blood was black and muddy-looking, and it preserved these characters in the hæmatomètre, where it did not separate into three distinct parts, as in ordinary circumstances. The day after its abstraction it had not altered, but still presented a black, pitchy-looking appearance. If contemporary writings had not admitted in a positive manner the possibility of purulent matter being circulated in the blood, our observations would have given this subject unquestionable proofs. So marked was it, in fact, that scarcely had the blood been received into a glass vessel, than there gradually formed in its lower part a thin layer of a whitish material, and globules of the same colour were equally observed in the walls of the clot. In an hour afterwards they were not noticeable; no doubt because of the colouring matter which had covered them. We have endeavoured many times to examine these white-coloured deposits separately, but the slight consistency and the viscosity of the clot constantly offered an insurmountable obstacle. This disease appeared all at once in twenty horses, and without any change of régime sufficient to account for it; on the contrary, it exercised its ravages on those

which for a long time had been submitted to the strictest hygienic measures. Out of this number seven died in the short space of fourteen hours, and two in about twenty-four hours ; three held out to the fifth day, but only to die in such a state of marasmus that they were scarcely able to stand. The treatment, which, under these disastrous circumstances, was pursued in a very energetic manner with regard to the other horses, sufficed to change the character of the malady, and to retard its rapid progress. For five or six days it was hoped that the care with which they were tended would have maintained this state of convalescence, and that turning them out to grass would effect a thorough cure, when a species of adynamic glanders attacked them and destroyed all our hopes. With some, there were complicated tumours and farcinous swellings, which became altogether incurable, and ulcerated rapidly under the influence of the morbid idiosyncrasy which gave rise to them. The physiognomy of this termination was very different from that which the glanders observed daily in cavalry regiments assumes, owing either to the prostration or the debility of the organism, in consequence of profound pain, or of the extraordinary circumstances in which the animals are placed. Whether under the circumstances of its nature, of its characters, of its progress, and of its terminations, this disease always constituted itself a new variety of glanders. The development of the ulcers was not preceded by the formation of vesicles or phlyctenea, as is usually remarked in the acute state of this affection ; they appeared suddenly in places where petechial spots had been, and without causing the slightest inflammatory phenomena. In the space of twenty-four hours the nasal mucous membrane was destroyed in the whole of its extent. The discharge was not abundant, and the engorgement of the lymphatic glands between the jaws was but slight. Suddenly there set in a prompt and great emaciation, which rendered the horses unrecognisable. At the autopsy we have noticed the chief lesions to be in the large intestines, in the blood, and in those places where the gangrenous engorgements had been. In four horses which had shown symptoms of dysentery, we

have found a livid greenish tint in the mucous membrane of the large intestine, with partial destruction of its parenchyma in many portions of its extent ; these places were of different shapes, and their size varied from that of a piece of twenty-five centimes to that of a five-franc piece. In the interior of the intestine there was found a greyish purulent matter streaked with blood, and mixed with the residue of the food. The liver and the spleen were considerably augmented in volume, and were gorged with a black unhealthy blood. The cavities of the heart and the large vessels were filled with black pitch-like clots of blood, which broke up readily in the fingers. The lining membrane of these was red-coloured, but without presenting any traces of inflammation. The colour was not removed by washing. The lungs showed nothing particular. The cutaneous engorgements were in such a state of decomposition and of putrefaction that words cannot describe the hideous and disgusting aspect they bore. All, even the muscular fibre, was confounded in a putrid and infectious mass ; here a blueish-black, without any consistency ; there a dirty yellow, and yet firm in substance ; elsewhere green, livid, and grey in patches, or more advanced it formed a liquid detritus similar to China ink.¹

For 1842, Professor Rey, in the *Compte Rendu* of the Lyons Veterinary College, makes the following remarks in regard to this disease : ‘ During the month of June an affection analogous to the epizooty of 1825 and that of the last year has re-appeared. Contrary to what was observed in the preceding invasions, it attacks by preference the horses which do not work, or which do but little, and above all, those horses which, being newly imported, have not yet become acclimatized. It is on the Flemish, Boulonnois, and Comtois horses that the disease chiefly seizes. High-bred horses and those in high condition have been spared ; while we have been able to study the disease in fourteen horses of the gendarmerie, even while they were receiving green forage. As in beforetimes, the symptoms indicate an affection of the digestive, and sometimes also of the respiratory, organs. The inflammation of

¹ *Damalix* and *Reynal*. Recueil de Méd. Vétér. vol. xix. p. 357.

the eyelids, and the diverse shades which the cornea assumes, were the first symptoms observed by the proprietors; there was, besides, engorgement of the posterior members and of the prepuce, depression of the vital powers, etc. A favourable termination has been obtained in all cases, notwithstanding some complications, often very serious, and notably pneumonia, bronchitis, etc.’¹

In the department of the Marne, two veterinary surgeons have reported on the epizoöty. One of these, M. Charlier, writes: ‘A disease which attacks the horse species—one I have very often had occasion to observe in the sporadic, but above all in the enzoötic state, and which I believe has reigned for a long time in our country—has been existing in an epizoötic form for more than six months, and has already made a great number of victims. This terrible disease, sometimes taken for an affection of the heart, the beatings of which are only one of the symptoms, has been and is still confounded with the gastro-enteritis described by authors.

‘*First Period.*—The blood at this period does not give any important evidence. A slight disorder of the digestive functions; a marked difficulty in breathing; a precipitation in the heart’s beats on the slightest exertion; lastly, a diminution of the muscular power—such are the early signs of the invasion of the disease. This state may persist for a longer or shorter period, dependent on the labour and the régime to which the animal is submitted.

‘*Second Period.*—That which is at first most striking at this stage is the great muscular debility; progression is difficult, uncertain; the animal staggers from right to left, breaks out into a perspiration in the stable, does not lie down, and becomes very poor. Some horses have general tremblings; with all, the subcutaneous veins are invisible; the hair is turned the wrong way; the head is carried low; the belly is tucked up, or sometimes there is meteorization. Some of the sick animals have partial œdemas; all have the limbs engorged, and the dependent parts, into which the infiltration has distended their subcutaneous cellular tissue, look bloated;

¹ *Rey.* Recueil de Méd. Vétér. vol. xx. p. 125.

the flanks are drawn up; the respiration is quickened and plaintive, as we may hear on applying our ear to their nostrils. This symptom can be increased on exercising the animal for a few steps. The conjunctiva, which has often a red tint, is infiltrated, and sometimes pale and covered with petechia; the pulse appears to be increased and quickened, but much less resisting than in inflammations, and, what is worthy of remark, it becomes stronger towards the evening. The beatings of the heart are very strong, accelerated, and tumultuous; a blowing sound (*bruit de souffle*) is heard at each ventricular contraction; micturition is more frequent, and the urine is more clear than in the first period; the excrements are also more soft, and contain badly-elaborated aliment; intestinal rumblings are strong and frequent, and may be heard some distance off; sometimes the articulations crack loudly. In some cases epistaxis is added to the other symptoms. At length, when this period is already far advanced, if setons are applied, there is much trouble experienced in arresting the bleeding which flows from the incisions, and which has a colour like the water in which flesh has been washed. Suppuration is also difficult to establish, for during the first days there only escapes a reddish serum. The appetite is preserved, and even seems to be augmented, in those animals which in the first period have exhibited symptoms of a slight inflammation. In the evening there is always an exacerbation of the symptoms. This state may last for from twelve to fifteen days, according to the strength of the animal and the treatment to which he has been submitted.

Third Period.—To the preceding symptoms in this stage there are others added which are yet more striking. The animals no longer eat, and the flanks are violently agitated on the least exertion; the skin is often dry, and closely adherent to the body; the periphery of the body and the extremities become cold; the eyes are buried in the orbits; the penis is often pendent; the anal orifice is retracted within the pelvis, and remains dilated; all the apparent mucous membranes become more and more pale; the pulse is insensible and filiform; the heart's beats are more accelerated and less

tumultuous. The venous pulse is remarked in the two jugulars ; the respiration becomes more quickened ; the expired air is cold ; underneath the belly, in the prepuce or the mammæ, there is œdema ; the borborygmi are more frequent ; the urine is scanty ; soon a colliquative diarrhœa comes on ; the swellings disappear ; and the animals, who since the commencement of the malady have not lain down, fall as if paralyzed, and have very violent spasmodic contractions of the members, of the neck, and of the muscles of the face—contractions which always precede death by a few hours.

‘Such is usually the progress of this disease ; yet I ought to observe that during the hot weather the symptoms are much more rapid in horses of a lymphatic temperament. Some of these animals even die suddenly, or at least very promptly, in a state of obesity quite remarkable. What is the nature of this disease ? I hesitate to answer this question, so difficult in all diseases, but much more so in those which reign epizootically. Nevertheless, in calling to mind the opinions of my learned professors MM. Delafond and Renault, and in collecting all the facts relating to similar sporadic diseases which I have studied at the clinic of the school, I have every reason to think that the affection I have described is due to an alteration in the constituents of the blood, with a predominance of the aqueous principle, and diminution of the solid matters. It is, in the language of modern times, a hydrohæmia complicated with anhæmia ; or, what is more explicit, in the very expressive words of M. Lignée, it is an aqueous cachexia. The symptoms during life, and the alterations found after death, testify to the truth of this assertion. To what other cause than to an alteration of the circulating fluid may be attributed this profound prostration of the vital powers, those serous effusions into the cellular tissue and the splanchnic cavities, and the general discolouration of the flesh which the dead bodies present ? But of all the lesions, the most characteristic is that of the blood itself. This liquid has neither its normal colour nor consistency. Collected in a hæmatomètre, it coagulates very slowly ; its white clot is without solidity, and really resembles a trembling jelly ; its

sedimentous or crude portion, in considerably diminished quantity, becomes deposited at the bottom of the vase as a black mud.¹

The observations of the other veterinary surgeon of Marne, M. Denoc, are much to the same purpose as those of M. Charlier. He says in the course of his description: 'Has the disease which is now made known to the readers of the "Recueil," and which is named a typhoid fever, any resemblance to that disease in man? Does it bear any analogy to it, and ought we to give it this name? Truly, if we form too exclusive an idea with regard to it, or if we would desire to behold only in typhoid fever a buttony eruption in the intestines, and the ulceration of Brunner's and Peyer's follicles—if besides these lesions we would only desire to witness complications, one might conceive doubts as to the analogy that I am about to seek to establish. But if, disengaged from all systematic ideas, we study one by one the symptoms—if we group them and compare them, and if after this study we regard in the same manner their morbid lesions, we will be obliged to admit that the disease we have already described is of a typhoid character, and if not identical, is at least analogous to that malady which is designated in man dothin-enteritis or typhoid fever. This disease has been little, if at all, studied in veterinary medicine, and the only observation we are aware of has recently been published in the *Compte Rendu* of the Alfort Veterinary School, year 1841-42. Before this publication veterinary surgeons have spoken, it is true, of typhoid fever, but so vaguely that the reader cannot draw from their writings any practical deduction. Some among them, mistaking the specialities which they have set themselves to observe, have, without doubt, confounded this disease (typhus) with inflammatory fevers (*affections charbonneuses*). This is a very grave error, for there exists between the two diseases so wide a pathological difference that it is scarcely possible to confound the two diseases. . . .

'*Pathological Anatomy*.—In cutting through the abdominal tunics, an abundant citron-coloured liquid escapes; the

¹ *Charlier*. Recueil de Méd. Vétér. vol. xx. p. 153.

omentum is destroyed altogether or in part ; the small intestines, as well as the colon and cæcum, are studded with small red points, but the colon is always the seat of most profound alterations. In it are found ecchymosis here ; there, large gangrenous patches ; elsewhere, traces of phlogosis, but above all, a vascular arborization of a most remarkable kind. In three in which sudamina was observed from the beginning, we remarked in the intestine an eruption of pimples (*boutons*) very similar to those which we notice on the skin of animals attacked with that variety of farcy called *cul de poule*.¹ The pimples or buds had a wide base, with raised and denticulated margins, and formed an ulcerous excavation, which had completely destroyed the mucous and follicular textures. In a fourth horse we remarked the same lesions by the aid of a magnifying-glass ; these ulcerations were so much smaller than in the other three cases, that they were invisible to the naked eye. We have never observed intestinal perforations. The liver was always double its healthy volume, its texture was broken up by the slightest traction and reduced to black liquid ; the spleen was often emphysematous. The kidneys were discoloured, unhealthy looking, and hypertrophied ; in four horses these glandular organs were resolved into a pulpy matter like mud. The heart was discoloured and contained fibrino-albuminous clots ; some of these clots, and chiefly those in the aortic ventricle, seemed to have undergone a kind of organization, and possessed the properties of white fibrous tissue. The aorta, the vena cava, and in general all the great arterial and venous trunks, contained clots similar to those met with in the heart. The vena porta was the only exception, as it contained black tarry blood. . . . If we are correctly informed, this disease made great ravages in some localities of the department of the Aisne, where it destroyed nine-tenths of the animals. No facts of its being contagious have shown themselves in our practice, and we abstain from any remarks on this point, only noticing that M. Demilly considered it as contagious.'²

¹ The name given to the chancrous ulcers of farcy, when luxuriant granulations are thrown out around their margins, then bulge and extend beyond the sores.

² *Denoc.* Recueil de Méd. Vétér. vol. xx. p. 328.

This epizooty, besides showing itself in Britain in 1841, as we have already noticed, appeared again in the two following years. In 1842, Mr. Child, of Swaffham, writes: 'The influenza is now (Jan.) prevailing among the horses that come under my care to an alarming extent. The symptoms in the young horses are: increased rapidity of the pulse, with a wiry feeling, cold extremities, staring coat, no appetite, and an evident staring gait. The symptoms are nearly the same in the older horses, only the eyes are much swollen, with very considerable discharge.'¹ Mr. Percivall, 1st Life Guards, writes: 'The influenza, or epidemic, among my horses is bronchitis, preceded or ushered in by laryngitis, and by it accompanied to its termination, nay, apparently outlived by it.' 'The expiring of the old year and birth of the new one has brought among our horses a disease uniform enough and prevalent enough to obtain the appellation of either "epidemic," "epizootic," "influenza," or "distemper," as suits the vocation or fancy of the groom or doctor in attendance. In most instances it has assumed the bronchitic form of disease, distinguished by concomitant laryngitis, which has produced an annoying sore throat, and a cough evidently painful from the feebleness of it, and the palpable efforts made by the animal to suppress it. The respiration has proved very slightly disturbed; just enough, however, with the absence of murmur and the deadness of percussion, to indicate some congestion of the lungs. Dulness, dispiritedness, gloominess, has been an early and remarkable symptom. The appetite has not altogether failed; but has been fastidious enough. The extremities are commonly warm. In two instances there has been very conspicuous an intolerance of light, the horse blinking or shutting his eyes when brought to the stable-door or window; and yet the eyes themselves have shown no appearance of disease, nor had any issue running from them. In one case the conjunctival membrane was evidently a good deal loaded with bilious tinge. In ordinary cases it has, in common with the Schneiderian membrane, appeared reddened and injected. No discharge, or only a lachrymous

¹ *F. Child.* The Veterinarian, vol. xv. p. 102.

one, from the nostrils. The tongue has been dry, and exhibited longitudinal broad patches of redness, but afterwards has attained that saponaceous character which indicates—and particularly when combined with the yellow tinge of the mucous membrane—gastro-enteritic disorder; and this has been further indicated, in some cases, by the dung-balls being either of so light a bilious shade as almost to appear of a gamboge colour, or else to show a tinge of the highest-coloured bile; and being at the same time coated with albuminous (slimy) matter. The urine is thick, and less than usual in quantity. Slight cases, treated at their commencement, will amend again on the third or fourth day, and the horses resume their work in a week. When there is confirmed inflammation in the air-passages, and the lungs become congested, the case will endure a fortnight or three weeks, or may occupy altogether a month; in such cases, the tenth day is the time amendment commonly shows itself, undisguisedly. Out of ten horses attacked with the disease, five were under five years old, two had completed their fifth year, two their sixth, and one his ninth. Eight were attacked standing in the stable; two, both three-year-olds, contracted the disorder while running in the straw-yard. The fatal case—one of the eight attacked in the stable—was taken ill in the usual manner, proved dull and spiritless and somewhat off his feed, with quickened pulse, and some slight and slow heaving of the flanks, perceptible only to the close observer, with reddened membranes, dry and unnaturally hot mouth and tongue, warm extremities, scanty excretions, etc. . . . The post-mortem examination disclosed congested lungs, in places proceeding to hepatization; pleural inflammation, not intense, with several quarts of water in both sides of the thorax; but no albuminous effusion. Glottis intensely inflamed.¹

And again this author says: 'From the close of the past year and the beginning of the present, up to the time I am writing (June), the influenza among horses has continued to prevail in the metropolis and different parts of the country with more or less fatality. In London it has assumed the

¹ *W. Percivall.* The Veterinarian, vol. xv. pp. 102, 117.

form of *laryngitis*, associated in some instances with *bronchitis*; in others—in all, I believe, where it has proved fatal—with pleurisy. The parenchymatous structure of the lungs has not partaken of the disease, or but consecutively and slightly. The earliest and most characteristic symptom has been *sore throat*, causing troublesome dry, short cough, but rarely occasioning any difficulty of deglutition, and, in no instance that I have seen, severe or extensive enough to produce anything like disgorgement or return of the masticated matters through the nose, and yet the slightest pressure on the larynx has excited an act of coughing. But seldom has any glandular enlargement appeared. The symptom secondarily remarkable after the sore throat and cough has been a dispiritedness or dulness, for which most epidemics of the kind are remarkable. The animal at the time of sickening has hung his head under the manger, with his eyes half shut and his lower lip pendent, without evincing any alarm, or even much notice, though a person entered his abode or approached him; and if in a box, his head is often found, during his illness, turned towards the door or window. Fever, without any disturbance of the respiration, has always been present; the pulse has been accelerated, though rather small and weak in its beat than indicative of strength; the mouth has been hot, sometimes burning hot, afterwards moist, and perhaps saponaceous; the skin and extremities in general have been warm. Now and then the prostration and appearance of debility have been such, and so rapid in their manifestation, that, shortly after being attacked, a horse has staggeringly walked twenty yards only—the distance from his stable to an infirmary-box. The appetite, though impaired much, has seldom been altogether lost. Generally, if a little fresh hay has been offered, it has been taken and eaten; but to mashes there has been commonly great aversion. During the long continuance of the wind in the east, the sore throat and cough have been unattended by any flux from the nose; but since the wind has shifted, within this last fortnight or three weeks, discharges from the nostrils have appeared, profuse even in quantity, and purulent in their nature; in fact, the disease has assumed a

more catarrhal character—*ergo*, I might add, a more favourable one. The disorder has exhibited every phase and degree of intensity, from the slightest perceivable dulness, which has passed off with simply a change in the diet, to an insidious, unyielding, unsubduable pleurisy, ending in hydrothorax, in spite of everything that could be done, and most timely done. So long as the disease has confined itself to the throat, and that there has been along with that only dejection, prostration, and fever, there has existed no cause for alarm; but when such symptoms have, after some days' continuance, not abated, and have, on the contrary, rather increased, and others have arisen which but too well have authorized suspicions that "mischief was brewing in the chest," then there became the strongest reasons for alarm for the safety of the patient.'

In 1843 the same authority writes: 'The return of spring, or rather the change from cold to mild weather, has brought with it the looked-for influenza among our horses. As diseases in general, from a variety of causes—some which are cognisable by us, some not—as years roll on alter their character, intensity, and prevalence, so epidemics or influenzas differ a great deal in different years. In some seasons they prevail so generally that old as well as young horses become affected; ordinarily, the young—the three, four, and raw five-year-olds—are, with few exceptions, the subjects of them. In some years the severity or fatality of the disease or diseases constituting the influenza is such that numbers of horses die of it, in spite of every kind of treatment that can be brought against it; in other seasons, so mild is it in its character, that under almost any mode of management, and often without treatment at all, the patients recover. On some occasions the disease is of a nature that "hangs about" the patient for a long while, without at any period placing his life in jeopardy, though in the end leaving him extremely out of condition and debilitated; on other occasions the disease manifests itself at once, and admits of being "cut short" by timely and proper treatment. . . . Any disease may be epidemic, influenzal, etc., that happens to prevail to any inordinate extent at any particular season or time.

‘ One year an influenza will be purely catarrhal in its nature ; another, it will consist in pulmonary affection ; sometimes it will manifest itself, in an especial manner, in disordered bowels. This year the leading and prevalent symptom of the influenza is sore throat ; the disease, indeed, might in most cases take the name of *laryngitis* ; some do occur, however, without this symptom. The sore throat is accompanied, perhaps preceded, by dulness, expressed in the eyes and movements of the horse, and by occasional cough, with fastidiousness of the appetite or actual refusal of food. In some cases *rigor* has been a precursory symptom. Seldom is there but trifling discharge from the nose, and often none at all. I have but in very few cases seen anything like that profuse running from the nostrils which has so commonly characterized the influenza of former years. This may be called the *mild form* of the present influenza. When the horse is brought to us, not with sore throat alone, but with fever and all its concomitants as well—with dejection, loss of appetite, accelerated pulse, heat and dryness of mouth, unnatural warmth of skin, with or without disturbance in the respiration, or with dry, short cough, redness of the Schneiderian membrane, and only an appearance of discharge from the nostrils, or none at all—with, in fact, symptoms of bronchitis—then the attack of influenza may be regarded as of more importance, and of a nature to require skilful treatment. This alone has proved the character of several cases that have come under my observation since the commencement of the present spring. In some few instances the *abdominal viscera* have experienced disorder. An attack of diarrhœa, perhaps, has come on ; or there has been, without any diarrhœa, pawing or other signs of uneasiness, indicating bowel complaint, in the beginning ; and afterwards sore throat and cough and the other ordinary symptoms of the influenza have appeared, and the case has proceeded in the regular manner. Many cases that have assumed the aspect of bronchitis in the first instance, and in which I might, had I not been forewarned of the consequences, been induced to bleed and otherwise deplete much, have, on the turn of the disease, manifested such a tendency to prostration and debility—to that state well

understood by practitioners under the appellation "low fever"—that it has been perfectly evident that, had I so depleted, I should have done ulteriorly incalculable harm.¹

The same disease prevailed in Scotland, according to Mr. Mather, who writes in September, 1843: 'In and around the vicinity of Edinburgh, the influenza, or epidemic, or epizootic disease has continued, for many months past, to prevail among horses with unabated fury, and with more or less fatality, assuming different diagnostic symptoms, according to the localities in which these animals were situated. At the present moment the cases appear to be more numerous, but of a milder character than at the beginning of this year and the conclusion of the last. Besides these diseases of the lower animals, we have intermittent and typhoid fevers equally as prevalent in the human subject, and making extensive and fearful ravages among the inhabitants of this city, more especially in the families of the poorer classes of individuals. . . . There must certainly be something dependent on atmospheric influence in the production of the malady. I might allude, for instance, to the present summer; and even during the spring months, the weather has been very unpropitious, attended with cold, wet, easterly winds, during which cough, sore throat, and many chest affections predominated to a considerable extent, both in the horse and in man. . . . During the present and bygone months of this year it made its appearance under a mild character, generally attacking the organs about the head, and requiring but little medical treatment. The first symptoms were a dull and languid state of the animal: hanging his head upon the manger, sore throat, coughing, slight difficulty in deglutition, watery discharge from the eyes and nose, the appetite in some impaired, others eating and drinking with avidity, the submaxillary and lymphatic glands enlarged, and the pulse accelerated. Some of the patients suffered very little from the disease, and in a day or two resumed their usual exercise, although not with as much spirit as when in health: in other instances it commenced with a disturbance of the respiration. There was fever; the pulse was increased to

¹ *W. Percivall.* The Veterinarian, vol. xvi. p. 361.

about sixty beats per minute, and very feeble; there was a peculiar drowsiness about the patient; the eyes half shut; shivering about the hind-quarters; the extremities rather cold; troublesome cough; irritability of the larynx, especially when pressure was applied externally; the mouth hot; the appetite impaired; and the bowels constipated. The secondary symptoms are, prostration of strength and staggering in the gait, which continues hanging about them for a considerable period afterwards. In the cases in which the inflammatory action was confined to the mucous membrane of the nose, the symptoms were more favourable, although the patient was languid for a day or two. The disease afterwards made its appearance in the form of a purulent discharge from the nostrils, or an abscess would form in the submaxillary or parotideal spaces; but these I consider to assume more of a specific catarrhal form than in the other cases, where more intense symptoms were exhibited. . . . When the disease occurred during the conclusion of last year, and in the early part of this, it assumed a serious and complicated character, and proved in many instances fatal. The concomitant symptoms were rather peculiar, and the post-mortem examinations discovered extensive disease within the thoracic cavity. The first form of the disease of which I shall treat was where bronchitis formed the type of the malady. It appeared in some instances to arise from, or to be connected with, uneasiness in the abdominal cavity, and colic was frequently present in the primary course of the disease. In other cases it appeared in the form of common catarrh. Perhaps there was slight cough, which was allowed to linger without attendance to it, as there was nothing apparently alarming in its nature; but in a few hours the case is altered, and the golden period for combating the disease will too often be passed away. It now manifests itself by more serious indications of the epizootic stage of bronchitis. The symptoms in the early part of the disease are easily recognised by the experienced practitioner. The patient will perhaps be fidgety, evincing marks of intestinal irritation; or, at other times, the disease will be ushered in by rigor, and, having had a previous attack of catarrh, he will be

defective in his appetite as the disease advances ; or there will be dulness and disinclination to move about ; the pulse feeble and accelerated, ranging between sixty and seventy beats per minute ; a bounding action at the head, while at the jaw the action in the artery is scarcely perceptible ; the respiration quick and laborious, accompanied with mucous râle or rattle ; the mucous membrane of the nose injected ; the countenance betraying anxiety ; occasional discharge from the nostrils ; the mouth hot and dry ; the animal searching about in the loose-box to obtain as much fresh air as possible ; the extremities moderately warm ; the bowels rather constipated. This is succeeded in two or three days by a rapid prostration of strength. If he is led about, he will stagger and reel. The cough is now very painful, but the pathognomonic symptoms require to be carefully watched. . . .

‘ Having traced the disease thus far in its progress, I shall point out another organ but too often affected, either combined or uncombined with the other organs attacked, viz. the heart and its capsule. . . . In a former part of this paper it was mentioned that in some instances of the disease the heart was full and bounding in its action, although at the radial and submaxillary arteries it would be quick, feeble, and irregular. . . . Should the disease, then, manifest itself in the type under which I have viewed it, it is evident that other symptoms will arise independently of the peculiarity in the action of the heart and arteries. Accordingly we find a greater prostration of strength ; the animal is dull, and his eyelids pendulous over his eyes ; his head resting on the manger ; disinclination to move ; appetite diminished ; dropsical swellings in various parts of the body ; suppressed secretion of urine, etc. Towards the latter stage of the disease the hinder extremities fail, and paralysis of them takes place ; all the functions in the body are depressed ; the swelling increases until the animal drops and is unable to rise again ; and then death puts an end to his miserable existence. . . . The post-mortem examinations of the cases that have proved fatal are as follows : In the abdominal cavity nothing particular could be found connected with the ali-

mentary canal, except a few petechial spots on the external surface of the tube. The liver presented a morbid huc, being quite hepatized, and easily lacerated ; in some there was an effusion of serum within the cavity. The kidneys were large, and displayed the effects of inflammation. The bladder was perfectly healthy, and generally found empty ; extensive patches of extravasated blood and serum were underneath the iliacus and psoal muscles ; and this effusion continued through the whole course of the crural and sciatic nerves, as they proceeded from that portion of the spinal marrow to their termination among the different muscles. In examining this cavity of the body, all the organs participated more or less in a morbid condition. The substance of the lungs in some cases was evidently abnormal ; the bronchial tubes suffered in proportion to the extent of the disease in them, being very much injected, and full of frothy mucus. Effusion of serum to a greater or less extent appeared, and adhesion betwixt the pleura pulmonalis and costalis. Connected with the heart and pericardium, there was effusion within the membrane, consisting of bloody serum. The external surface was of a purple colour, and very much thickened in its coats, arising from a deposition of coagulated lymph during the active stage of the inflammation. The heart, in one or two instances, was much enlarged, and its colour changed from its natural pink to a dark purple, with numerous spots of ecchymosis on its external and internal surface, and changed from its natural structure to a hepatized one ; in fact, it had lost that firm dense muscular feeling which it previously possessed. . . . I conceive it as more or less a disease of the heart and its surrounding membrane, and also connected with the organs of respiration.¹

For some years rabies has been more than usually frequent in the dog, and in some countries even assumed an epizootic form. Herr Eckel, of Vienna, in a masterly summary of the history of this dreaded affection, makes the following observations : ‘It is not the first time that rabies in dogs has appeared as an epizooty in this capital and its neighbourhood ;

¹ *T. Mather.* The Veterinarian, vol. xvi. p. 512.

and if the accounts of the disease in the last century, and even before that period, are meagre, those of the earlier part of the present century are more to be depended upon.¹ According to the most reliable accounts, there occurred not more than four or five cases of sporadic madness among dogs annually in Vienna and its vicinity between 1808 and 1814. The disease first appeared in Vienna as an epizooty in 1814, when it commenced in October with five cases of madness, and terminated in December with fifteen cases. The malady increased in virulence in 1815, seven cases occurring in January; and the number increased during that year to forty-six. According to Professor Waldinger, who watched and described it, there could be no doubt as to the epizootic character of the disorder, as in by far the largest number of instances—forty-three—the dogs attacked by it had not been bitten. Peculiar atmospheric conditions preceded and accompanied it; and, at last, diseases dependent upon the weather, with disturbance of the functions of the skin, as, for instance, rheumatism, arthritis, mange (*schäbe*), were unusually frequent among dogs. Among other domestic animals, disorders of the vena portæ system were prevalent. From 1816 to 1830, madness continued to appear in a few individual sporadic cases, although during this period it raged epizootically in Bavaria, Vorarlberg, Switzerland, and Saxony, and especially in the years 1828 and 1829 in Dresden, where it was very carefully observed and described by Professor Prinz. In 1830, it again appeared epizootically in Vienna with thirty-nine cases, and seems then to have ceased for some time; for in the succeeding seven years, from 1831 until the end of 1837, nothing was heard of it here or elsewhere. It was remarkable that in the hot summer of 1834, only one case occurred in the capital. In 1838, a new cycle commenced with seventeen cases of rabies, which increased in the following year to sixty-three; in 1840 the number sank to thirty-seven cases, and in 1841 it reached one hundred and forty-one, a number

¹ For the epizooties of rabies in the last century, see our previous volume on 'Animal Plagues.' The earliest on record is that alluded to in the Welsh laws of Howel the Good (see first volume, page 56).

never attained here previously. The following circumstances were noticed during the prevalence of the disease ; by far the most common form of the malady was the raging madness (*die rasende wuth*), of which there were eighty cases ; of the dumb madness (*stille wuth*) only thirty-one.

‘The months of February and May, in each of which twenty-one cases occurred, were the worst ; then April, June, and January, with eighteen, seventeen, and sixteen cases respectively ; and September, November and December, with five or four cases each. Of the hundred and forty-one cases, fifteen were bitches ; the remaining hundred and twenty-six were dogs. No castrated dog was attacked. Of the fifteen bitches, it could not be ascertained that either of them had been bitten by a mad or even suspected dog. Most of the animals attacked were strong, healthy, and middle-aged—from two to seven years old ; of dogs under a year old only two were affected, and of dogs over seven years only one. By far the greater number attacked were pet dogs (*luxushunde*), or house dogs which were well cared for.’¹

In Wurtemberg, madness in dogs was prevalent from September, 1839, until the end of 1842. Some writers imagined it had been transmitted from foxes.² In the Grand Duchy of Baden, from January 1st, 1840, to the end of February, 1842, rabies was also noticed in two hundred and thirty-two dogs and twenty-one bitches.³

In Lyons, the period for 1839-40 is thus noticed : ‘The distemper in young dogs has been common this year. It has killed a certain number of these animals by the inflammation fixing itself on the lungs and the pleura ; but the nervous disorders and the rheumatic conditions accompanying the malady have been apparently less frequent ; a circumstance due, we believe, to the temperature, which has not been extreme ; the cold and the heat having been moderate, or at least not long continued. Madness (*rage*) has not been more frequent, for the same reason.’⁴ In the *Compte Rendu* of the

¹ *Eckel*. Mittheilungen Oesterreich. Veter. vol. i. p. 55.

² *Hering*. Repertorium, vols. ii. p. 91, iii. p. 285.

³ *Ibid.* vol. iii. p. 274.

⁴ *Recueil de Méd. Vétér.* vol. xviii. p. 23.

same school, however, for the year 1840-41, M. Rey states : ' During the year the cases of rabies have manifested themselves in a great number of the dog species ; out of sixty-four of these animals kept under observation, thirty-three have shown symptoms of this affection, and have succumbed. It is to the sudden diminutions of temperature after the great heats, to the cold affecting the skin, that ought to be attributed the spontaneous and so frequent appearance of this redoubtable malady. The autopsies have not furnished anything remarkable. We have observed four new cases of madness transmitted accidentally by dogs to solipeds—two horses, an ass, and a mule. The saliva of the mule, when inoculated on two dogs, did not produce any result. . . . Already we possess some facts which only tend to prove that the virus preserves its virulency in passing through many animals. On two occasions a dog affected with transmitted rabies has caused the infection of another animal of the same species. A ram, aged fifteen months, bitten in the lip by a dog affected with spontaneous rabies, contracted the malady in eleven days. By inoculation with the lancet, the virus of this ruminant has developed the disease, in about thirty-five days, in another ram of the same age. Here is then an example of the transmission from one herbivorous ruminant to another, of the rabies communicated by a carnivorous creature. In three experiments, we have observed that of two dogs bitten at the same time, the first one only took the disease ; may we then think, with Dr. Marochetti, that after the first bites the virus is weakened ?'¹ The same author reports for the year 1841-42 : ' During this year the city of Lyons has been terrified by the frequent outbreaks of rabies ; eight persons have perished in consequence of bites by dogs attacked by this malady. Owing to the energetic measures enforced by the care of the municipal authorities, three thousand wandering dogs have been killed. Never has the school received so great a number of hydrophobic animals ; out of one hundred and four dogs which have died in the hospital under the influence of several affections, sixty-two have perished from rabies. It is not easy to

¹ *Rey.* Recueil de Méd. Vétér. vol. xviii. p. 760.

assign the causes of the frequency of so redoubtable a malady ; it is here especially that we must recognise the difficulty of discovering the etiology of the malady. In 1842 rabies manifested itself in an enzoötic manner, not only in our city, but also at Aix, Nimes, and Rouen, in different climates, under opposite atmospherical conditions, and at diverse periods. Nevertheless, it was during the month of June last, in the hot weather, that we observed the cases to be most numerous. Hitherto it has been recognised that it was necessary to seek for one of the most active causes of rabies in the intemperatures of the weather, and especially in the sudden transition from an elevated temperature to cold showers of rain, so frequent in the vicinity of mountains. But it is necessary to note, before everything else, and in connection with our sanitary police, the facility with which the disease may be transmitted by vagrant dogs, who are exposed in great numbers to the attacks of hydrophobes, and who, in the absence of all surveillance, contracting the disease in their turn, will spread it in a frightful manner. We bring to the support of this assertion the statement that the examples of communicated rabies have been far more frequent than the spontaneous cases, and that the scourge has soon disappeared after the measures of destruction ordered by the authorities were enforced. In compiling our registers of mortality for the canine species, we notice that since the year 1811—during the space of thirty years—there died in the infirmary seven hundred and seventy-nine dogs attacked with rabies. The malady has been observed at all seasons of the year, but in different proportions : June exceeds all the other months ; April comes nearest to it, and then in decreasing proportions come May, July, August, March, and September, February and October, January and November, until at last December is reduced to the smallest number.¹ In 1843, there were only fourteen cases of rabies reported from this school.²

The year 1841 must be regarded as an important and memorable one in our history, from the circumstance that the contagious pleuro-pneumonia of cattle, which, as we have

¹ Recueil de Méd. Vétér. vol. xx. p. 121.

² Ibid. p. 756.

recently seen, had been steadily extending itself on the continent of Europe, appeared about the middle or towards the end of the year in England. So late as 1840 it was severely felt among the herds in France at the Pas-de-Calais, and had attracted the attention of the French Government; and there can be no doubt that it was prevalent, and very destructive, in Holland for some years previous to this date. When it first manifested itself in that country, however, is uncertain. Van Hertum asserts that it had caused cruel ravages there before it was brought to us; he believed it to be contagious, and declares that the contagium was imported from a foreign source. In this opinion he is supported by Mecke and Peters, Dutch veterinarians, who maintain that this disease was unknown in Holland in 1829, or even in 1836.¹ It appears, however, to have been prevalent in Holland in the former period, for an extensive importer of cattle, Mynheer Poot, of Rotterdam, informed Professor Simonds in 1858, that when pleuro-pneumonia first broke out in that locality in 1829, and before experience had demonstrated that the flesh could be safely used as food, he and others had to kill the affected beasts and bury them entire, with a view to prevent injury being done to the people, as well as to limit the spread of the malady.² We have in previous years alluded to its prevalence in that and other countries, and to such an extent and in such close proximity to our own shores, that we can scarcely be surprised to find it in England, where its presence was not suspected until it had made considerable progress. From what source it was derived has not been satisfactorily determined; indeed, its previous history appears to have been altogether unknown here, and its existence on the Continent quite overlooked for some time. The trade in foreign cattle had been increasing, and the importations of stock of all kinds from many sources was considerable, even previous to the 9th of July, 1842, when their admission at a small rate per head was allowed by Act of Parliament. This trade was doubtless

¹ *Magazin für Thierheilkunde*, vol. ix. p. 109.

² *J. B. Simonds*. Report on the Cattle Plague. *The Veterinarian*, vol. xxxi. p. 153.

the cause of the introduction of the 'foot-and-mouth disease,' and that now under consideration ; and the continuation of this traffic on such an extensive scale, and without proper, or any precautions, has kept Britain constantly supplied with fresh instalments of the contagium from the infected centres abroad. Before the development of the cattle-trade, the cattle and sheep of this country had been, as our history testifies, remarkably healthy, and the sudden and wide-spread manifestation of such serious maladies caused surprise and alarm among agriculturists, no less than among veterinary surgeons.

Though the disease was very acute and fatal, according to the reports of the veterinarians, killing more than fifty per cent. of those attacked by it, yet it does not appear to have been so formidable or extensive as on the Continent. It showed itself in districts very wide apart, and so closely did it follow the '*ekzema epizootica*,' that many veterinary surgeons and medical men either confounded them, or imagined they could trace some connection between them. Mr. Cherry, for instance, strangely mixes up the equine influenza of 1836, the aphthous epizooty of 1839, and the contagious pulmonary disease of this and later years into one general malady, which he designated the 'epidemic.'¹ The Veterinary Professor, Sewell, was no more fortunate in recognising their well-marked individual characteristics.² And Mr. Faussett, a surgeon, committed a similar blunder, being of opinion that the eruptive or aphthous disease was only the primary stage of the pulmonary affection, which he accordingly named the 'secondary distemper,' and which, he declared, it had invariably followed, with one exception, in all the cases he had investigated.³

No disease at all approximating to this had been witnessed in England previously to 1841 ; for though cattle were sometimes affected with pleuro-pneumonia in a sporadic form, yet it was rare, and readily yielded to remedial measures ; whereas this contagious pestilence presented such peculiar

¹ *Cherry*. The Veterinarian, vols. xx. p. 644, xxi. p. 691.

² *Sewell*. Report on the Epidemic among Cattle. Journal of Royal Agricultural Society, vol. ii. p. 119.

³ *W. Faussett*. Observations on the Epidemic Pleuro-pneumonia or Secondary Distemper of Horned Cattle. Dublin Medical Press, vol. vi. p. 390.

features—became so general, was so fatal, so utterly beyond the influence of remedies, and presented such striking necroscopic appearances—that it was commonly known as the ‘new disease.’

Its introduction into England was so obscure, and its progress so insidious, that it is not until 1842 we find it attracting particular attention. According to Mr. Ferguson, it began in the south-east of the island: ‘This remarkable disease manifested itself at first in the early months of the year 1842, in the south-east of Great Britain and in Ireland. From thence it continued to spread across the neighbouring provinces with a fatality, it may be said, unprecedented in the history of epizoöties.’¹

The late Professor Barlow, of Edinburgh, writing from Cheshire in 1842, says: ‘About the beginning of this year a disease appeared in our neighbourhood, proving almost universally fatal, the symptoms of which I will endeavour to describe. The animal for the first two days appears dull, with slight cough; the appetite slightly diminished, and rumination carelessly performed; the breathing accelerated, and the pulse of an oppressed character, and increased to 80. On the third or fourth day the breathing becomes more laborious, and each expiration is accompanied with a suppressed groan; the pulse has risen to 90, and is of the same character; the appetite and rumination begin to disappear, although in some beasts both continue until within a short time before death; the animal betrays great pain when struck upon the sides, or when pinched on the lower part of the throat; there does not, in the majority of cases, appear to be any constipation, nor are the bowels unduly relaxed; the secretion of urine is mostly limited, and is often highly coloured. By the seventh or eighth day the symptoms are increased in intensity: the expired breath appears like a volley of steam issuing through some confined aperture; there is a large quantity of froth about the lips, which, falling on the floor, becomes, as it were, condensed, and saturates the litter, rendering it needful to change it often; the pulse still

¹ *Ferguson.* Recueil de Méd. Vétérinaire Pratique, vol. xx. p. 667.

increases in frequency, but sadly loses force, and in some instances is almost imperceptible. The extremities now become cold ; the animal stands with her mouth open ; the breath and other excretions emit a cadaverous odour ; and she dies about the ninth day. Some cases are more acute, and terminate in less than a week.

‘The appearances after death are these: The lungs, more especially the right lobe, are enormously enlarged, and hepatized through their entire substance ; indeed, the solidity is so great that much force is requisite to cut through them.¹ When an incision is made, the external part has the appearance of marble, feeling quite smooth and, as I said, solid under the hand. When strongly compressed in the hand, the substance loses its consistence and separates into granules similar to the boiled liver of any animal, a reddish viscous fluid exuding therefrom. The pleural membrane does not exhibit much trace of inflammation, although the thoracic cavity generally contains as much fluid as the enlarged lung will permit. In some cases the lungs are so enlarged as to fill and adapt themselves to the cavity of the chest, and will weigh seventy or seventy-five pounds. The bronchial tubes are filled with the same viscous fluid, which is also found in flakes throughout the trachea, as far as the larynx. No washing or maceration will separate it from the small air-cells and bloodvessels. The heart seldom, if ever, exhibits any diseased appearance, although in some few cases of pleuritic

¹ The special anatomical disposition of the ox's lung gives it a peculiar and characteristic appearance, when it has been submitted to pathological changes due to inflammation ; and as it would appear that many veterinary surgeons have been unable to discriminate between the lesions of simple pleuro-pneumonia and those arising from the specific malady now under consideration, Professor Haubner, of the Dresden Veterinary School, has indicated certain pathological distinctions which experience has proved to be well-founded. He says: ‘Non-contagious pneumonia, which sometimes occurs, and is accompanied by hepatization, may be confounded with epizootic pleuro-pneumonia. In both affections there is the marbled appearance on a section of the diseased lung, but in the first the hepatization is everywhere of the same age, and consequently is in the same state and has the same tint ; while in contagious pleuro-pneumonia, the alteration having successively invaded the pulmonary tissue, there are the hepatizations of different periods, more especially recognisable by the variation of colour.’—*Handbueh der Vétér. Polizei.* Dresden, 1869, p. 220.

inflammation, the pericardium occasionally shares therein. The digestive organs do not exhibit any affection connected with this disease, excepting diarrhoea in the last stage. The kidneys and mucous membrane of the bladder often display slight inflammation.¹

Mr. Cox, of Leek, Staffordshire, in the same year gives a good description of the symptoms and pathological alterations induced by the malady. But the question of contagion he could not decide: 'Atmospheric agency appears to be the cause of the disease, yet I believe it to be in some degree infectious. . . . Where the infected animals have been removed, and disinfectants freely used, its ravages have been stayed.'²

In September of this year Mr. Hales, of Oswestry, reports the disease spreading from Cheshire into Shropshire, and its having been more or less observed during the preceding winter. Speaking of a post-mortem examination, he states that 'the left lobe of the lung was immensely enlarged, and when cut into had an appearance similar to what is called marbled beef, and about the same consistence. This appearance was produced by effusion of lymph within the substance of the lungs; and when a portion was pressed in the hand, a very considerable quantity of serum exuded. . . . There was effusion in the pericardium, and considerable adhesions of the pleura.'³

Mr. Youatt, also in 1842, remarks that 'another epidemic, essentially different from the former (the "foot-and-mouth disease"), has made its appearance, and its ravages are dreadful. In the neighbourhood of the metropolis more than four hundred deaths have occurred; the writer would hardly exaggerate if he said that nearly twice that number have either been destroyed by the disease, or killed and sent to the butcher before the meat was deteriorated. In its essential character, and in the course of treatment which alone seems to possess any control over it, it differs most materially from that of 1840. . . . It seems to be originally an affection of the pleural lining of the chest or covering of the lungs—most frequently

¹ *J. Barlow.* *The Veterinarian*, vol. xv. p. 438.

² *W. Cox.* *Ibid.* p. 573.

³ *J. M. Hales.* *Ibid.* p. 589.

of the latter. . . . Of the primary cause we know little or nothing ; and, so far as we have had opportunity of observing, the disease is not essentially either infectious or contagious. It depends on some unknown atmospheric agency. That agency is perhaps more developed in some situations than in others. It is more frequent and more fatal in low and marshy land than in upland ground, provided that upland pasture is protected. Cold and damp appear to be the principal agents in developing it. . . . The present affection does not appear to have connection with the disease that prevailed two years ago.¹

Mr. Holmes, of Thirsk, Yorkshire, in March, 1843, writes : 'After 1841 had passed, practitioners as well as farmers hoped that the succeeding year (1842) would in a measure be exempt from this noxious plague, as the spring set in so favourably ; nor was there anything, apparently, to discourage such a hope until August came ; and field-stock in general seemed in condition, and, to outward appearance, to have thriven well with their summer's graze, especially such as had been previously reduced, but had seemingly recovered. Soon, however, from the heat of the weather and their improved condition, many that had to all appearance been accounted perfectly healthy and sound, again showed symptoms of the presence of this farmers' foe, although under a different modification ; and here I may observe that the cattle which came again under my notice were for the most part Irish ones of 1841.'² This writer was evidently of opinion that the present malady was only the 'foot-and-mouth disease' in a modified form. 'The visitation of 1842-3, so far as my observation has extended, was attributable to the animals still retaining remains of the epizooty of 1840-1, although apparently outwardly quite recovered.' Cattle imported from Ireland were much more extensively and severely affected than native stock—a circumstance Mr. Holmes attributed to the fatigue they had undergone.

Mr. Hayes, of Rochdale, Lancashire, thought it was an

¹ *W. Youatt.* The Veterinarian, vol. xv. pp. 592, 604.

² *G. Holmes.* Ibid. vol. xvi. p. 217.

amalgamation of the symptoms of influenza with those of a late epizoöty ('foot-and-mouth disease') affecting the lungs.¹

Mr. Barlow, in another communication in 1843, speaks of its having swept away hundreds of cattle in Cheshire. He carefully and correctly enumerates the symptoms, and adds: 'It has assumed an epizoötic character, occurring in all situations and under all circumstances. Its first appearance in this part was in the neighbourhood of boggy land and in woody localities, attacking more especially cattle recently brought into the country; but it soon extended its ravages, and now attacked them irrespectively, in all circumstances and situations.' Alluding to the symptoms, post-mortem appearances, and the general characteristics of the malady, he observes: 'On reading the preceding account, some might suppose, and perhaps justly, that these symptoms and post-mortem appearances indicate merely ordinary bronchitis, pneumonia, or pleurisy, singly or combined, as the case may be. Should such, however, come to treat this affection in the way usually and successfully pursued in isolated cases of these diseases in horses and cattle, they will be, as I have been, from its almost invariable failure, induced to adopt another course.'² This esteemed teacher of veterinary science designated the malady the 'pleuro-pneumonic epizoötic.'

Mr. Hutchinson, of East Retford, at the same period reports its appearance in his district, and gives a good description of it.³

From Cumberland, where it had also shown itself in December, 1842, Mr. Carlisle sends some valuable observations 'on the present epidemic among cattle—a disease, from its mortality, of material importance. It has made its appearance in this part of Cumberland, and threatens to be a most formidable pestilence. As sure as the animal is attacked, so sure is its doom sealed. . . . The present epidemic among cattle is of the most fatal kind. . . . I cannot think the present epidemic is in the least connected with the previous one. . . .

¹ *J. Hayes.* The Veterinarian, vol. xvi. p. 343.

² *J. Barlow.* Ibid. p. 493.

³ *H. Hutchinson.* Ibid. p. 658.

Its first appearance in this country was among some Irish cattle.' Several striking examples are afforded of the contagious properties of the malady, its deadliness, and its resistance to medical treatment. This enlightened practitioner, aware of his inability to cope successfully with it by remedial measures, and cognisant of its transmissible character, counselled sanitary precautions—isolation, disinfection, etc.—and his advice was followed with great success.¹

The malady spread unchecked, and in the various newspapers and veterinary journals there are constantly recurring notices of its extension and devastation. In 1843, for instance, we read of severe losses 'from the malignant influenza amongst cattle in Shropshire, in June.'² In October of the same year, another newspaper states that this malady had made its appearance in the northern counties in its most virulent shape; and a Derby journal reports the loss from it, in a district of eight or ten miles round that city, within the previous year, at £2,000.³

In Scotland, it appeared about the same time as in England. Mr. Fulton, of Wigton, in the beginning of 1843, states: 'About a fortnight ago, I was called to a dairy of fifty cows; one had died a week previously, one was lying dead, and another died on the following day.' The dairy stock was nearly exterminated on this farm in a brief period, and all the bodies examined presented the same unmistakable lesions. 'The farm is on the Carse of Cree, lying low, but the cow-house is in every way comfortable. This is the fourth year that a dairy has been on the farm, and it had hitherto done well. The cows are in good condition.'⁴

The disease spread over Scotland, appearing at first in localities into which new stock had been introduced, especially from fairs.

From a large balance of evidence, however, we are inclined

¹ *J. Carlisle*. *The Veterinarian*, vol. xvi. p. 282.

² *The Wolverhampton Chronicle*.

³ *The Derby Mercury*. With regard to the origin of the malady, the *Lancet* in 1845 strangely mistook it for the Cattle Plague, and ascribed its source to the plains of Russia, 'where it reigns epidemically.'

⁴ *T. Fulton*. *Ibid.* p. 277.

to believe that the epizooty first showed itself in Ireland, and was carried from that country into England and Scotland. For instance, the veterinary professor, Ferguson, in a very instructive lecture delivered in Dublin in the middle of 1842, says: 'A period of nearly three years has elapsed since the first appearance in this country of an epizooty among horned cattle, the chief characteristic of which was a pustular affection of the mouth, nose, and feet. Previous to being observed in Ireland, it had existed for some time in the sister island, England. . . . Fortunately this disease was short in its sojourn, mild in its effects, and extremely easy of treatment, . . . Unfortunately, although the pustular disease was so mild in its effects on every description of animal which it attacked, lambs excepted, it was merely the precursor of one of the most fatal forms of distemper that has been known to exist within the present memory of man. I allude to that which at present reigns with sad mortality through almost every county in Ireland. *It has now been in this island nearly eighteen months*, during which time the fatality among neat cattle has been, in a proportion of twenty to one, greater than at any former period. . . . Its principal seat is the organs of respiration, particularly the lungs, their covering,' etc. The professor, unfortunately, did not believe in the contagiousness of the malady. 'Although the pustular affection which preceded the present epizooty was highly contagious, the latter I believe, from much observation, not to be at all so.'¹ In this lecture the disease is graphically and minutely described, particularly its pathological anatomy.

Mr. Lord, writing from county Cork in July, 1841, states that 'pneumonia in cattle is at present very prevalent and fatal in this part of Ireland, although at a very unusual season for such a complaint.'²

In a newspaper for September, 1841, there is the following brief but unmistakable notice: 'In the end of August we learn that a new distemper has appeared amongst cattle in the county of Cork. It is more destructive to life than the last distemper (aphthous fever), the respiration is affected, and

¹ *H. Ferguson. The Veterinarian*, vol. xv. p. 575. ² *W. C. Lord. Ibid.* vol. xiv. p. 401.

it is very difficult to cure.’¹ In October we read: ‘Pneumonia is the general character of the epidemic at present prevailing amongst cattle in this county (Cork).’²

In county Meath, it would also appear that the epizooty began in 1841, for Mr. Barnes, in reply to some queries addressed to him, writes: ‘The distemper began in 1841, in this neighbourhood, and was worse in 1842, when it was very general and fatal. I cannot say when it ceased, for it continued very general for seven or eight years. . . . All breeds and all ages are equally subject to it. . . . It was a very infectious disease, and spread rapidly. It was most prevalent in 1842, 1843, and 1844. . . . The mortality was about twenty per cent.’³

Veterinary Surgeon Doyle thought the disease first appeared in the vicinity of Dublin, as early as 1840.

Mr. Faussett, in 1841, notices the wide prevalence and destructiveness of the epizooty in Ireland. ‘The epidemic distemper of horned cattle has of late raged with violence in many of the grazing and pastoral districts of this country; carrying off, in some instances, whole herds of some of the largest and highest bred of the species.’⁴

In Roscommon it was observed in 1842, and in Galway and Limerick in 1843.⁵

That the disease was present in Ireland before it manifested itself in England, and that it was introduced into the latter by Irish cattle, appears to have been recognised at this early period of its history in this country. Mr. Relph, of Seberg-ham, who has furnished a good account of it, remarks: ‘The distemper among cattle appeared in Ireland in 1841, and spread itself in that country, and at length gained the western coast of England, and the northern one of Scotland. In August, 1842, a farmer on an open plain near the centre of the maritime county of Cumberland, bought four Irish stirks. In October one of these became ill . . . but it died. Soon after another of the lot was in like manner affected’—and this

¹ Saunders’s News Letter.

² *Olden*. Irish Farmers’ Magazine.

³ The Census of Ireland for 1851.

⁴ *Faussett*. Dublin Medical Press.

⁵ For other notices of the epizooty at this time, see the Census of Ireland for the year 1841, part 5, vol. i. pp. 222, 226, 227, 229, 236, 371.

also died. 'The illness next showed itself in two of his milch-cows, in the latter part of December, and for two months afterwards fresh cases continued to occur in this stock.'¹ It may be remarked that this veterinarian believed the disease to be contagious, and that it possessed 'the singular property of cleaving to the animal for weeks, or even months, without perceptibly disturbing the animal economy.'

And Mr. Copeman, of Walpole, Norfolk, writing in January, 1845, after tracing the course of the affection, remarks: 'We do not hear of its existence in this country until the commencement of 1842, when we find, in several of the public papers, paragraphs stating that it was then raging, with great fatality, in many of the metropolitan dairy establishments Thus we are led to infer that this disease commenced in Ireland; and, as most of the Irish cattle are imported at Liverpool, we first hear of its existence at that part of our isle. In a short time it finds its way into Cheshire, Shropshire, and Middlesex; but it is not heard of in any of these parts until 1842, although it had been raging in Ireland for nearly twelve months before.' Instances are given of cases which came under his own observation, which prove that the contagion was introduced into England and Scotland by Irish cattle.²

This malady and foot-and-mouth disease continued their ravages in the three kingdoms until 1866, merely because no steps were adopted to carry into effect the simplest preventive measures. At a late period, a medical gentleman was appointed by the Government to investigate the nature of the lung malady, and recommended what he thought was necessary for its suppression; but utterly ignorant of comparative pathology, and knowing nothing of the history of the disease, he of course confounded it with the Cattle Plague which visited England in the last century, and embodied his erroneous opinions in a Blue Book.³ The losses caused by the two diseases in the United Kingdom can never be fairly estimated, but they have amounted

¹ *J. Relph.* The Veterinarian, vol. xvii. p. 647.

² *A. S. Copeman.* Ibid. vol. xvii. p. 10, vol. xviii. p. 67.

³ *Headlam Greenhow, M.D.* Report on Murrain in Horned Cattle. For further information concerning the epizooty about this period, see *G. Waters.* Essay on

to very many millions of pounds. They have proved not only a most serious scourge to the nation, but to their presence must largely be attributed the depressed state of agriculture.

On the Continent, in 1842, this disease had invaded Holstein, and in 1843 it caused so much alarm that the Danish Government deputed a veterinary surgeon to observe it, and report on its progress.¹

In 1844 its ravages were terribly severe in Switzerland. In Oberengadin, a valley in that country, no less than from three to four thousand head of cattle perished. Its contagious character was well-marked. Wirth says: 'In the year 1843 this disease began in a few places, and spread in a very serious manner until the present time (1846) in the Canton Zurich, extending continuously every year, as I have shown in my history of this plague in the canton ;² and simultaneously it broke out in the Duchy of Baden, and the Kingdom of Wurtemberg, the infection having been carried into both places from the Swiss States.'³

Pleuro-pneumonia, *Journal Royal Agricultural Society*, vol. ix. *J. B. Simonds*. The Nature and Treatment of Pleuro-pneumonia in the Ox, *ibid.* vol. x. *Finlay Dun*. Essay on Pleuro-pneumonia, *Highland and Agricultural Society's Journal*.

¹ *J. B. Simonds*. Report on the Cattle Plague. *The Veterinarian*, vol. xxxi. p. 159.

² *Archiv für Thierheilkunde*, vols. ii. iv. v. vi.

³ *Wirth*. *Op. cit.* The principal continental veterinary authorities who have written on the malady up to this date are :

Kausch. Originalbemerkungen über die Rindviehsterben. Leipsic, 1790.

Sander. Beiträge zur Prakt. und Gerichtl. Thierheilkunde. Berlin, 1810.

Lappe. Ueber die Ansteckende Lungenseuche des Rindviehsterben. Gottingen, 1818.

Havemann. Ueber die Lungenseuche beim Rindviehsterben, in *Andre's Okonomischen Neuigkeiten*. No. 39, 1819.

Ithen. Ansicht über die Lungenseuche. *Archiv für Thierheilkunde*, vol. i. p. 75.

Ernst. Bemerkungen über die Lungensucht des Rindviehsterben ; *ibid.* vol. iii. p. 208.

Kündig. Beiträge zur Kenntnitz der Lungenseuche des Rindviehsterben ; *ibid.* p. 390.

Wirth. Nachträge zu Ernst's Bemerkungen über die Lungensucht ; *ibid.* vol. iv. p. 250. *Lehrbuch der Seuchen*, etc. Zurich, 1846, p. 289.

Nötel. Die Lungenseuche des Rindviehsterben. Nordhausen, 1828.

Vix. Beobachtungen über die Lungenseuche beim Rindviehsterben. *Busch. Zeitschrift für Thierheilkunde*, vol. i.

Schneider. Ueber die Lungenseuche. *Henle. Zeitschrift f. Staatsarzneikunde*, zehnter Jahrgang, Vierteljahrschrift, No. 2.

It is worthy of observation that Austria, harassed by the Cattle Plague, yet suffered much less than some other countries—our own, for example—from this contagious lung disease. With the exception of Bohemia, Moravia, and part of the Tyrol, it is but little spread, and in Hungary would appear to be almost unknown. The existence of any special immunity from the disease in the Hungarian breed of cattle seems doubtful; and, according to Röhl,¹ it is more probable that if the malady is less frequently witnessed among this bovine race, it is because the agricultural industry of that country is of little importance, the cattle receive an alimentation more appropriate to their nature, and up to the present time *the importation of foreign stock has been of the most limited character.*

The Cattle Plague was introduced into Egypt in 1841, and raging until 1844, is calculated to have destroyed six hundred and sixty-five thousand head of cattle. The *Times* newspaper for October 27th, 1842, states that ‘in Lower Egypt the disease among the oxen has caused dreadful losses, eighty-four thousand of these animals having perished throughout Egypt. The Pacha had, in consequence, been obliged to send three regiments of artillery, with their horses, to his farms, in order to assist in tilling the ground. He had also imported a number of horses from Tarsus, which were conveyed in two frigates to Alexandria, and were intended for the same destination.’

While the identity of the malady has not been disputed, its origin—whether imported into Egypt or generated spontaneously—has been questioned. To settle the matter, the late M. Renault, Inspector-General of the French Veterinary Schools, collected all available evidence, and this affords the

Wagenfeld. Die Lungenseuche des Rindviehsterben. Dantzig, 1832.

Dietrichs. Ueber die Lungenseuche des Rindviehsterben. Berlin, 1821.

Sauter. Die Lungenseuche des Rindviehsterben, etc., Winterthur. Zurich, 1835.

Euers. Die Gelegenheitsursachen der Lungenseuche des Rindviehsterben.

Gurlt und Hertwig. Magazin, third year, p. 384.

Delafond. Traité sur la Malade de Poitrine du Gros Bétail. Paris, 1844.

And various papers in the *Revue de Méd. Vétér.* and the *Magazin für Thierheilkunde.*

¹ *Röhl.* Lehrbuch der Pathologie, third edition, vol. i.

strongest presumptive proof in favour of the malady having been introduced by Steppe cattle. The following is a summary of the evidence, which is very interesting: 'In 1840, the Viceroy of Egypt having divided the greater part of the territory of Egypt into appanages for his children and the high civil and military functionaries of his government, and reserving for himself vast properties, the necessity for cultivating the ground to a greater extent was felt. But the number of animals proper for labour, and above all for the irrigation of the soil, being insufficient, it was imperative to procure more from foreign countries. For this purpose, the Viceroy, his son Ibrahim, and several other great proprietors, sent agents into Anatolia and Karamania—countries which, by their proximity, the quality, quantity, and price of the cattle they furnish, seemed to offer the greatest advantages. Numerous purchases were made there during the winter of 1840-41, and considerable herds were collected for embarkation in the towns of Adana, Tarsus, and Kazauli. But *before* their embarkation a destructive epizootic disease broke out among them, and caused the death of a great number. Instead of abandoning those animals to the disease which decimated them, efforts were made to send them off to Egypt towards the close of the spring of 1841. As might have been easily foreseen, the disease continued on board the vessels in which they were conveyed, and during their transport it became necessary to throw many of them into the sea. As to those which survived, they were landed at Alexandria in a generally deplorable condition. This transportation was carried on for the two following years under the same circumstances, with the same accidents and the same losses. Now, the disease, far from becoming milder, seemed, on the contrary, to increase in intensity after the landing of the animals at Alexandria, and therefore their proprietors hastened to scatter them in the surrounding plains, hoping thereby to diminish the chances of mortality. But this was not the case; the animals carried everywhere the germs of the malady, which had already caused the death of a great number, and spread it among animals of their species in every place into

which they penetrated. From thence the contagion extended rapidly into Lower Egypt, the Delta, and penetrated even into Upper Egypt, attacked also the buffaloes, and caused three-fifths of the horned cattle to perish; and it made such ravages that, contrary to the practice in that country, they were obliged to make use for agricultural purposes of horses, asses, mules, and camels.' From this it is clear that the malady did not first appear in Egyptian oxen, but in the cattle of Syria and Turkey, and it was to supply extraordinary demands that they were imported into Egypt. It was not even during their voyage that the disease showed itself; it was in Syria, *before* their embarkation. According to documents furnished by the Egyptian Administration, it is distinctly made out that these cattle not only came from the interior of Anatolia and Karamania, which certainly furnished a good number of them, but that they were procured in Roumelia, *from the banks of the Danube, and from Moldavia*. The oxen of these regions belong to the Steppe breed, and it is in Southern Russia that the disease usually rages most violently. M. Renault adduces proof to show that this particular breed was seen in Egypt. M. Ismail, an Egyptian veterinary surgeon, writes: 'In 1843, in consequence of the disasters occasioned by contagious typhus among the horned cattle of Egypt, there were brought from abroad and from *Southern Russia*, I believe, herds of cattle, which arrived by the Mediterranean. I was in Alexandria when they were landed. They were of the middle size, and their proportions were irregular, their bodies gross and thick, the head strong and large, their muzzles of a slate colour, their napes furnished with strong hair, the back and loins short, slightly arched; their horns were long in the majority—short, however, in some of them; their chest short and lank, the members strong, the tail hanging low, gross and furnished with long and strong hair. The dominant tint of their hair was what is called light mouse and slate colour; never red or bay. What is very remarkable is that on the whole length and in the middle of the dorso-lumbar region, there are hairs of varied length, forming a ridge from the shoulder to the tail. Some also had similar hair under the

belly, on the jaws and the quarters. It was not the first time, I may state, that I had seen cattle of that breed. I had noticed such cattle eighteen months previously in the farms of Ibrahim Pacha, son of his Highness the Viceroy.¹ As M. Renault observes, this is a faithful portrait of the Steppe ox, and its presence coincides too remarkably with the introduction of the disease into Egypt to admit of anything like reasonable doubt as to the origin of the outbreak. Additional proof is furnished in a Russian document sent to the French Minister for Foreign Affairs, which says : ' In the governments in which the Steppes are situated, there are estimated to be six million cattle reared for slaughter, and these are sold in Russia, Poland, Germany, *Anatolia*, *Karamania*, and even in Syria.

Elsewhere we have a more circumstantial description of this Egyptian visitation, which possesses considerable interest to those engaged in tracing the origin and spread of animal contagions : ' Towards the end of the year 1841, a ship going from Karamania (in Asia Minor) to Alexandria lost one hundred out of two hundred oxen which constituted its cargo. These animals, as M. Renault has shown from official documents, were Steppe cattle from Moldavia, as well as oxen from the interior of Anatolia and Karamania. On the arrival of the ship at Alexandria, the remaining animals were declared to be affected. In order that they might be more effectually treated, they were landed and driven to a village close at hand, with orders that they should be kept in strict quarantine. This injunction was not attended to in 1842 ; consequently the Plague broke out among the Egyptian cattle ; and the proprietors, in order to get rid of the affected beasts, drove them to the important market of Tantalo, a village in the Delta. This unwise expedient spread the contagion, and in a short time the Plague covered the whole of Egypt. Its stay was, however, brief ; for in the spring of 1843 it disappeared, most of the animals having been destroyed. Towards

¹ *M. Renault*. *Le Typhus Contagieux des Bêtes Bovine, peut-il Naître Spontanément sur les Animaux de l'Espèce Bovine Etrangers à la Race des Steppes*. Paris, 1856. A very able treatise, which may be said to have been the means of preserving France from the ravages of the Cattle Plague in 1865.

the close of the same year large numbers of cattle passed from Nubia into Egypt, especially towards Ghizeh, where the pestilence had committed the greatest havoc. The disease, which had perhaps not been completely extinguished in the spring, broke out again, and killed nearly every animal attacked, notwithstanding that many precautions were taken. Buffaloes also were affected. Ninety per cent. of the entire herds of Egypt caught the contagious fever, and the losses in 1842 amounted to 300,000 head ; on the second invasion, in 1843, to 350,000 ; and on the third, 15,000 ; that is to say, in three years 665,000 fell a prey to the malady.¹

In 1842 and 1843 this fearfully destructive pest ravaged the Tchernamov country, to which, however, it was confined by severe measures on the Don and at Taman, all communication being interdicted.²

Mr. Yearnès, British Consul at Odessa, makes us acquainted with another outbreak which manifested itself in August, 1844, and the manner in which it became spread northwards through Bessarabia, Podolia, and Volhynia, and by Poland and Prussia to the shores of the Baltic: 'This distemper, having caused an immense loss of horned cattle in Southern Russia, was mentioned by me in my despatch. . . . The disease has been called the "Cattle or Siberian (?) Plague." The grey-coloured breed, alone indigenous upon the Steppes, is thought to be particularly subject to it ; and many persons are assured that this country is never entirely free from it, though it may remain unnoticed during a long time while inactive and restricted to obscure parts. Under certain circumstances, some of which may be explained, the disease acquires great intensity, and, becoming violently contagious, spreads throughout the country. . . . Its original seat is believed to be Bessarabia, though the people of that province say that the contagion was brought to them from Galicia—an opinion probably erroneous. . . . Last autumn was exceedingly dry, and the winter moderate though long. The season and the temperature seem in no way whatever to affect the intensity or duration of this

¹ *J. Gamgee.* The Cattle Plague.

² *Quarterly Journal of Agriculture*, October, 1845.

destructive disease. That it is supremely contagious is universally believed ; but phenomena similar to those of the cholera have been observed, which seem to give it the character also of an epidemic.

‘The following description of the symptoms and course of the disease I believe to be correct. It was given to me by an intelligent proprietor, and it has been confirmed to me by the evidence of many others: The infected animal loses its appetite, and ceases to ruminate ; it remains long motionless on its legs, which seem to be stiffened ; the ears are cold and pendent. Later, the eyes begin to water, and a slimy foam drops from the mouth ; the beast becomes agitated, lying down and getting up often ; little thirst ; and the hair along the back is bristled up. At length, too weak to rise, it remains upon the ground moaning, the flanks heaving quickly, and with every appearance of cruel sufferings that end in death. In most cases a dysentery, preceded by constipation, comes on at the second period of the disorder, with evacuations exceedingly offensive. The constipation does in some cases, however, continue to the end.

‘On bodies being opened after death, aliments are discovered in the stomach and intestines agglomerated into a hardened mass ; all the viscera in a high state of inflammation ; and, in some individuals, a sanguine congestion towards the head, with the skin reddened with blood.

‘The same authority states that the more vigorous animals are generally the first to be attacked, and that almost all of them die, whereas the weaker often recover. Cows, calves, and oxen become infected, without distinction of age. Some sink under the disease within the first forty-eight hours ; others on the third, fourth, or fifth day. The convalescence of the animals that recover lasts from twelve to fifteen days ; during the first three or four they remain recumbent, without the power of rising. The cows that recover always lose their calves by abortion, *and it is added that cows of an infected herd, without having sickened themselves, generally lose their calves in the same manner. . . .*

‘With respect to the medical treatment practised and re-

commended here, a great many modes have been cried up, of none of which the benefit is sufficiently authenticated to authorize their enumeration ; and I have heard sensible and experienced men declare that the acuteness of the malady defies all remedies till now known. I presume, however, to make mention of one of a very simple nature, that many assert has been found available at the first stage—namely, a decoction of linseed, first ground into a coarse flour, and boiled in water with some nitre. The patient is to swallow a bottle of this in the morning, and another at night ; intestinal injections of the same being made in cases of costiveness. The measures upon which all opinions agree are those that have in view the preservation from contagion. For this purpose the Government of Austria has forbidden, since many months, the passage of Russian cattle across her frontiers. The Russian Government took similar precautions upon the Don in 1842 and 1843 ; and the order is now everywhere enforced, that the dead bodies of infected cattle are to be buried immediately, and without subtracting the hides or any other part of them. So great is thought to be the contagious power of the Cattle Plague, that dogs feeding on the carrion may, it is said, convey the infection, as likewise herdsmen, by carrying along with them mephitic effluvia in their clothes. With greater reason is the ground considered to be contagious over which diseased cattle have passed ; and even ponds and wells where they have been watered, on the surface of which the mucous discharge floats like an oily substance. That cattle may be preserved from infection by the prevention of all dangerous contact has been proved in several instances known to myself ; and I am told, further, that on a separation of the sick from each other, recoveries become more frequent.

‘ I am intimate with a gentleman who holds a small estate near Akerman, in Bessarabia, his lands lying within the Leinan, the Dneister, and the sea. He was the more easily enabled to shut out communication with all stray cattle, in consequence of which his own stock was entirely saved, while that in the immediate neighbourhood all perished ; for in no other part of the country was the disease more violent. I am

acquainted with another person who has a large estate in the government of Cherson, and who escaped loss by similar precautions. Previously to the breaking out of the disease he had sold produce to be taken away by the purchasers, and, rather than allow strange bullocks to come upon his grounds, he voluntarily undertook the labour and expense of the delivery upon an assigned and distant spot. I also know a district in the Taurida that was entirely free from the disease till two yoke of oxen came with goods from a distant quarter to the estate of a lady. It broke out there a few days after, upon which the neighbouring proprietors, with the consent of all parties, instituted measures by which it was confined to that one place, where it soon wore itself out. These instances, and many similar, bear upon the power of contagion ; but there are others equally notorious, from which the same inferences cannot be drawn.

‘An estate of 15,000 acres, about twelve miles from Odessa, was divided last year between three brothers. The share upon the high-road was early infected, and of eighty-five head of horned cattle thirty-two quickly perished. The second share was not immediately attacked, for the disease went round and destroyed eight hundred in a Bulgarian colony, and a great number in other estates close to the back of it ; and it was not till two months later that the infection reached that share, and carried off twenty-five beasts out of the eighty. But, strange to say, the third share has entirely escaped to the present day, though contiguous ; and no precautions were taken in either case against communication, and its produce was carried to market without interruption. In the district of Yampol, in Podolia, a large village upon one side of a small rivulet escaped infection, while another closely opposite lost its whole stock ; and a third village on the same side as the healthy one, and only a short distance lower down, was equally unfortunate.

‘The disease appears sometimes to pursue a capricious course. It will also advance upon a direct track, without spreading infection laterally ; thus, it will ravage one-half of a village, and leave the other half free. It will then make a

circuit, returning and attacking places that had remained uninjured. It will likewise come back to the same place twice or thrice. I have heard some persons say that they lost their strong working bullocks, then their cows and calves, at different periods. To trace the course of the disease upon the map, however desirable, cannot be attempted with any assurance in the absence of official authority. I have said, and it is generally believed, that this time it originated in Bessarabia, whence, probably, it spread to the governments of Podolia and Cherson, and then to Kiev and Volhynia. It is reported to have reached Mohilov, and that the central provinces of Karkoff and Poltava have not escaped the same infliction. In this latitude the infection has not extended so far eastward. The government of Ekaterinoslov has only been partially affected, and the Vice-Consul at Taganrog tells me that it has not been spoken of on the Don since 1843.

‘It is with still greater hesitation that I may speak of the extent of the mortality. On the one hand, there may be exaggeration in private opinion; and on the other, were official returns even made known, they must be accepted with equal caution; *for functionaries in Russia, by an instinctive policy, always attenuate the amount of public disasters*, if by necessity they are confessed. For this reason, no more than occasional hints are to be found in the provincial journals even of the existence of this disease, in the shape of a farrier’s prescription; yet I am assured that the loss in Bessarabia by the end of last year was reported to be one hundred and thirty thousand head of cattle, and that since it has amounted to one-half of the whole stock. In the government of Cherson, in which this town is situated, the loss at the present day is estimated at one-third, which is confirmed to me by many proprietors. In two large estates on the Dneiper, the property of Count Woronzow, it is said that not less than twelve thousand head of cattle have perished, of which four thousand belonged to the lord and the remainder to the serfs. In the Talnya estate of General Leon Vlariskien the mortality exceeded six thousand beasts. The head-groom of the general had a choice herd of fifty milch-cows, all of which have died,

with the exception of one cow that lost its calf by abortion. A gentleman in the vicinity prided himself in the possession of a herd of two hundred and forty beasts of a coloured and foreign breed, and all of them have been carried off. Of similar instances in further districts I shall not venture to say anything; but the number of cattle swept away throughout the country must be enormous. It is shown by the raised rates of carriage, and great difficulties are anticipated in all field labour. The prices of cattle have, however, not augmented; for no purchasers are yet bold enough to come forward.

‘In concluding this report, I am happy to be enabled to inform your lordship that this most destructive disease is at present (April, 1845) generally subsiding. Bessarabia is declared to be nearly free of it, and this neighbourhood is so entirely. I presume to add that, on referring to books, I find that the disease I have been endeavouring to describe seems to be identical with the murrain, that malignant epidemic which, during so many ages, has at different times ravaged various parts of Europe, with symptoms modified, possibly by local causes.’¹

In January, 1845, the Belgian envoy at Vienna writes: ‘The malady termed *Peste Bovine* made its appearance first in Russia and Bessarabia; then it extended itself successively in Moravia, in Upper and Lower Austria, in Bohemia, in Poland, and in Galicia. It has been in these two latter countries that it has committed the greatest ravages, but less, however, than asserted in the public papers. Thus, for example, in Bohemia, not more than one thousand two hundred head of stock had died of it on the 20th of December.’² As soon as the epidemic manifested itself in any province of the Austrian dominions, that province was immediately placed in a state of suspension and quarantine, so that no horned cattle were allowed to be removed from it into any other; nor were sheep, pigs, wool, pigs’ bristles, raw hides,

¹ J. Yearnese. The Quarterly Journal of Agriculture, October, 1845.

² M. Renault says it raged so fiercely in Bohemia that nearly all the cattle were destroyed.

hoofs, or unpurified lard, allowed to be exported. In pursuance of this regulation, all communication with other parts of the empire, in reference to such commodities, was interdicted in Galicia, Bohemia, Moravia, and Upper and Lower Austria; but such interdiction no longer remains in force, excepting in the cases of Galicia and Bohemia. Besides these precautions, the Austrian Government has established a quarantine against Russia, Bessarabia, and Moldavia. Notwithstanding the amelioration of the disease in the Austrian states, the governments of Bavaria, Saxony, and Prussia have each established a quarantine against the whole of the Austrian provinces in which the epidemic had been declared to prevail.¹

In regard to this disease Professor Simonds says: 'There have been doubters of the infectious nature of the rinderpest; and whenever speculation has been allowed to take the place of facts, although it may seemingly have had science as its basis, great injury has resulted to those most interested in the question. A notable instance of this kind has been furnished us by Professor Renault, director of the Alfort Veterinary School, and through his kindness we are enabled to transcribe the following particulars: 'Towards the end of 1844, the rinderpest, which had prevailed among the cattle in Galicia, passed through Moravia, and made its appearance in Bohemia, in the circle of Königgrätz. The malady had already made some progress in the district, when M. Verner, Chief of the Veterinary Department of Bohemia, was sent from Prague by the Government to inquire into the precise nature of the affection. This gentleman, who had had many opportunities of seeing the rinderpest, had no difficulty in recognising this disease in the malady in question, and, with a view to arrest its further progress, he recommended to the superior authorities the adoption of those measures which experience had shown to be best calculated not only for this, but also to cause its quick extermination; namely, to slaughter the sick animals, isolate those which had been exposed to the contagion, and establish a *cordon* around the

¹The Veterinarian, vol. xviii. p. 199. During the years 1844-5, 1,000,000 horned beasts are calculated to have perished through this malady.

infected places. These measures were put in force at once, and soon had the effect of arresting the further progress of the malady, when some young physicians ("disciples of the pythogenic school, I fear," observes Dr. Budd in his essay on this disease), who had had an opportunity of making, for their instruction, post-mortem examinations of the cattle, thought that they recognised in the affection an analogy to that of the *typhus abdominalis* of man. They therefore communicated their opinion to some members of the faculty of medicine at Prague, who, after making several autopsies, came to the same conclusion. A report was accordingly sent to the Government, setting forth that the malady was not contagious, that it could rise spontaneously amongst the horned cattle of the country by other influences than those of contagion, and that the means which the Government had adopted were not only useless but vexatious. As the faculty had great authority in all sanitary matters, the Government, although it did not entirely remove the restrictive measures, still did not enforce them with its usual rigour; the result of which was that in a few weeks the malady had extended into several other circles of the kingdom, committing such dreadful ravages that the Austrian Government took alarm, and forthwith sent M. Eckel, Director of the Imperial Veterinary Institute, into Bohemia. He at once found that it was the rinderpest, and recommended the rigorous enforcement of the former measures, the result of which was that in six weeks or two months afterwards the malady had entirely disappeared in the kingdom of Bohemia.¹

Another account was given by M. Renault at a meeting of the Central Society of Agriculture of France;² but the history of this Bohemian outbreak is concisely summed up in the following terms: In the autumn of 1844, the Cattle Plague threatened many of the countries adjoining Russia. From official reports we find that it spread to Bohemia in September of that year, first penetrating to Königgrätz and the circle of

¹ *J. B. Simonds*. Report on Cattle Plague, p. 55. *The Veterinarian*, vol. xxxix. p. 687.

² *The Farmers' Magazine*, 1857.

Bidschow, where an extensive trade in cattle is carried on. Veterinary surgeons in Bohemia recognised the disease, and their observations led them to regard it as the fever of the Steppes. Medical authorities at Prague argued that the pestilence had arisen spontaneously in Bohemia from a combination of causes, analogous to those which had given rise to typhoid diseases and similar epidemics in man; this view having been accepted by Government—it being supported by Nadherny and others—as the right one, was the cause of much laxity in the adoption of sanitary measures. Meanwhile the plague extended rapidly throughout the whole of Bohemia, the sixteen districts of this kingdom having been completely invaded. The whole of the countries of Western Europe were now alarmed at its fearful advances. Dr. Eckel, Director of the Vienna Veterinary School, repaired to Bohemia to make investigations into the real nature of the then existing malady. He found that it was without doubt the rinderpest, which could never have arisen from unfavourable weather or any combination of prejudicial influences of local origin, such as deteriorated food, development of miasmata, etc., but that it absolutely depended on the extension of disease from the Steppes, which of itself would account for the enormous mortality among the cattle. Galicia at this time suffered in consequence of the importation or transit through it of oxen from Podolia and the adjoining Prussian provinces. From all appearances, it may be conclusively admitted that the malady originated in Bessarabia. During the first half of September it spread from Galicia into Moravia. One after another, it attacked twenty-four districts, throughout which one thousand and sixty-five animals caught the distemper, and out of the whole only one hundred and sixty-three recoveries were reported; of those that perished, one hundred and twenty-nine were slaughtered. Instances of the disease were observed only in a few districts of Hungary, but the symptoms presented by the cattle were without doubt those of Steppe murrain. In the south of Austria some cases appeared as early as the first half of October, 1844. From this time to the 15th of December of the same year, the entire deaths were

confined to three districts; this, in all probability, depended on the fact that as soon as the disease was recognised as the veritable Cattle Plague by delegates from the Vienna college, appropriate measures to stop its progress were speedily suggested and carried into execution. According to Eckel's investigations, during his stay in Moravia, five thousand two hundred and twenty-four head of cattle from Podolia were bought in the market of Olmütz by thirty-two merchants, and they constituted one hundred and nineteen lots which were driven into Bohemia; of these, five thousand and eight travelled on the high-road to Prague, and the others were driven in various directions. The outbreak of the disease in Bohemia occurred in different directions, in which it was afterwards ascertained the cattle had been sent. In conformity with the opinions of Eckel, orders were issued in Prague, on the 6th December, that certain sanitary measures should be stringently carried into execution. From this time the plague speedily diminished in virulence and extent, so that towards the end of January, 1845, it was considered as having completely disappeared from the Austrian Empire. On the 19th of January, 1845, a statistical report was drawn up, indicating the losses sustained in Bohemia by the ravages of the Cattle Plague, and the result was that on the whole two thousand one hundred and ninety-seven animals had been infected, of which one hundred and fifteen had recovered, one thousand one hundred and twenty-two died, nine hundred and forty-five had been destroyed, and six were still sick.¹

Grave apprehensions were excited as to the extension of this malady into other countries, and alarming rumours were circulated. In Britain, where epizootic diseases had not been studied, these rumours took the strangest forms, and all kinds

¹*J. Gamgee.* The Cattle Plague, p. 315. For details of the malady at this time see *Spinola.* Mittheilungen über die Rinderpest gesammelt auf einer im Auftrage der Königl. Preuss. Staatsregierung in Frühjahr, 1845, nach Polen und Russland unternommenen Reise. Berlin, 1846. *Seer.* Über die Rinderpest der Jahre 1844 und 1845, in Bohem. Zeitschrift für Thierheilkunde von Dieterichs, Weber und Vix, vol. xiv. 1847. *Haupt.* Über einige Seuchenkrankheiten der Hausthiere in Sibirien. Berlin, 1845. *Lorinser.* Untersuchung über die Rinderpest, 1846.

of maladies were mixed up and confounded into one, which was designated as the 'new epidemic,' 'new disease,' 'murrain,' etc., and this, it was confidently asserted, had appeared in the London markets, and in various parts of England and Scotland.¹

France also took the alarm, and the *Moniteur* and *Presse* published articles urging the necessity of preventing its entrance into that country. Government was stated to have sent M. Yvart, Inspector-General of the Veterinary Schools, to study its progress and the administrative measures adopted for the purpose of checking it.²

¹ The Veterinarian, vol. xviii. p. 270. The Quarterly Journal of Agriculture, July, 1845.

² The Times, January 21, 1845.

APPENDIX.

SHEEP-POX IN ENGLAND IN EARLY TIMES.

IN the previous volume (p. 79), a description is given of what there is every reason to believe was a most serious outbreak of Sheep-pox in this country in A.D. 1275-6-7, which continued as a plague for twenty-eight years, and extended to Wales in 1279, the origin being, according to Thomas of Walsingham, a Spanish ewe imported by a rich Frenchman into Northumberland. An endeavour is there made to trace the early history of the disease, and it is shown that it was in all likelihood known in England in Saxon times—probably two centuries before 1275; and in the fourteenth century it was alluded to by Chaucer, in his ‘Canterbury Tales’ (Pardoner’s story). Since that volume was published, Mascal’s curious old work on ‘Oxen, Horses, Sheepes, Hogges, Dogges,’ published in 1596—two centuries after Chaucer—came into my hands, and in this reference is undoubtedly made to the disease. He says: ‘Sheep will have a scab which shepheardes call the pocks, and it will appear on the skin like red pimples or purples, and they will be broad-like as broad as farthings, *and there dieth many sheepe thereof* for lacke of looking to betimes. Therefore to handle often all your sheepe, and looke all over their bodies, and see if ye find any sheep taken therewith, ye shal by and by take him from his felows, and put him into some fresh pasture. And then see and looke daily to the rest of the flock, and draw them as ye shal see them infected thereof, and put them in fresh pastures if they have it; in somer when there is no frosts, then it shall be good to wash them in water. Some take the juyce of nightshade, mixt with grease, and

therewith anoint ; or garlick beaten together with tarre, and so anoint ; or the juyce of pellitory of Spaine, or of artichoke mixt with strong vineger, and therewith wash it. Other remedies shepherdes have the which I know not, but these, I think, shall be sufficient' (p. 231).

In the previous volume (p. 83) reference was made to the probable existence of the disease in France in 1460 ; and for 1567 (p. 134) I have given a quotation from the French physician, Joubert's work, on 'The Plague' (*De Peste Libellus*), which distinctly specifies Sheep-pox as well-known to the people of Montpellier.

For 1710 or 1711 (p. 188), I have made an extract from Dr. Fuller's book on 'Eruptive Fevers,' in which he describes the existence of the disease on the South Downs, and its extreme contagiousness and mortality. After this date, I can find no further mention of the prevalence of Sheep-pox in Britain, and when it disappeared it is impossible to say. Nothing more is known of it on this island until it was imported by Merino sheep in 1847.

INFLUENZA OF THE HORSE.

A.D. 1746.—According to Ozanam (*Histoire Médicale Générale et Particulière des Maladies Epidémiques*, etc. Paris : 1817), Catarrhal Fever or Influenza appeared in an epizoötic form amongst horses over the whole of Germany, Bohemia, and Moravia.

A.D. 1776.—Huzard, sen. (*Journal de Médecine*, tom. liv., p. 333), mentions an epizoöty of Influenza in horses, following an outbreak of the same disease in the human species, in the spring of this year.

CHRONOLOGICAL SYNOPSIS OF GENERAL DISEASES,

ARRANGED ACCORDING TO SPECIES,

FROM B.C. 2048, TO A.D. 1844.

PANZOÖTIC DISEASES, IN WHICH SEVERAL SPECIES WERE COINCIDENTALLY AFFECTED.

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1200.		In Aegina.	Ibid.	.	.	i.	7
1183.		In Troy.	Ibid.	.	.	i.	8
753.		At Rome.	Mankind and Animals	.	.	i.	10
545-6.		At Rome.	Mankind and Cattle	.	.	i.	12
488.		At Rome.	Mankind and Animals	.	.	i.	12
472.		Universal.	Mankind and Cattle	.	.	i.	12
463.		At Rome.	Mankind and Quadrupeds	.	.	i.	13
453.		At Rome.	Mankind, Birds, and Flocks (<i>Anthrax</i>)	.	.	i.	13
443.		At Rome.	Ibid.	.	.	i.	13
431.		At Rome.	Ibid.	.	.	i.	13
430.		At Athens.	Mankind and Animals	.	.	i.	14
399.		At Rome.	Ibid.	.	.	i.	15
278.		At Rome.	Mankind and Cattle (<i>Abortus Epidemicus</i>)	.	.	i.	16
218.		In Spain.	Dogs and Birds	.	.	i.	16
212.		In Syraeuse.	Animals and Mankind	.	.	i.	16
175-6.		At Rome.	Cattle and Mankind	.	.	i.	17
126.		In Africa.	Mankind and Animals	.	.	i.	
43.		In Italy.	Oxen, Horses, Dogs, and Deer (<i>Anthrax</i>)	.	.	i.	18
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69.		In Rome.	Domestic Animals and Mankind	.	.	i.	23
92.		In Palestine.	Mankind and Cattle	.	.	i.	26
190.		In Italy.	Ibid.	.	.	i.	27
126.		In Italy.	Mankind and Animals	.	.	i.	27
381.		In Constantinople.	Mankind and Cattle	.	.	i.	29
446.		In Constantinople.	Ibid.	.	.	i.	38
502.		In Scotland.	Mankind and Animals	.	.	i.	38
547.		In Great Britain and Ireland.	Ibid.	.	.	i.	38

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591.	In Europe. Ibid. (<i>Anthrax</i> ?)	i.	41
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696.	In Ireland. Ibid.	i.	42
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